

The Australasian **MANUFACTURER** SERVING ALL INDUSTRY

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Saturday, March 24, 1951.



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AGENTS IN ALL STATES

AFTER BUSINESS HOURS

This Amazing World

(By John Dexter.)

"NUTS TO YOU" couldn't fail to be the spontaneous reply to the unutterable gibberish of the following recent British administrative order: "In the nuts (un-ground—other than groundnuts) order, the expression 'nuts' shall have reference to such nuts, other than ground nuts, as would, but for this amending order, not qualify as nuts (un-ground—other than groundnuts) by reason of their not being nuts."

What, or who, is "nuts," anyway? *

The deeper the archaeologists dig the plainer it becomes that there is nothing new under Heaven—not even beer. It would seem, indeed, that this vitalising beverage is associated intimately, and certainly joyously, with Man from his remotest past. Further evidence

of this came to light recently when translators working on an ancient Babylonian tablet deciphered the fact that, more than 6,000 years ago, the men and women of Babylon fought over and relished their beer. And what beer! One brew reached such an amazingly high standard that its brewers actually deified it, naming it after the goddess Siris. The tragedy of it from modern Man's point of view is that the thrice precious recipe has been lost forever.

The Babylon boys and girls certainly did themselves proud in this regard. For we learn that they had a choice of dark beer, red beer, brew with head, brew without head, and yet another bearing the intriguing brand "beer for asperions." What, one

wonders, were its dizzy after-effects? *

Another interesting fact to emerge from the ancient tablets is that all brewing was under the control of female priests. Sad to relate, however, excessive drinking and lawlessness spread throughout the land. This in time led to reform measures, the final upset being that the female priests lost their highly important office, which was handed over to the male priests, who henceforth remained undisputed masters of the brew. *

It is interesting to recall that ostrich feathers, now fashionable after being in the limbo of forgotten things for over thirty years, are probably more sensitive during their growth than the feathers of any other bird. So responsive are the birds to their surroundings, in fact, that any variation in their usual diet and living conditions is calculated to impair the shapeliness and density of the plumes. *

So far as is known, the earliest golf ball may, some hundreds of years ago, have been just a piece of polished wood, shaped like a walnut. By the year 1600, however, golfers had taken to the feather ball, it being more than probable that the first of its kind was brought over to England from Holland. About 1845 the gutta-percha ball was first manufactured, this being superseded at the turn of the century by the Halkett ball, the first of the modern type, with rubber core and composition covering. *

Train a child in the way he should go—and walk there yourself occasionally. *

Very early in prehistory, flint-users appear to have been divided into two groups: those who utilised flint cores, and those who used flint flakes. Core tools were made by taking a nodule of flint and chipping it into the desired shape with a piece of hard stone. Flake tools were made entirely differently. The upper surface of a flint nodule was chipped to the desired form, then one strong sharp blow detached a large flake with the chipped surface uppermost and a flat under-surface, which showed a scar where it had been split from the nodule. *

It is better to give than to lend and it usually costs about the same. *

It is recorded that at a large London party George Bernard Shaw cornered one of the young lady guests and started talking about George Bernard Shaw. After about three hours he had more or less exhausted this all-absorbing topic (certainly he had exhausted his listener). So, turning to her he said: "Well, young lady, we've been talking about me long enough. Now let's talk about you. What did you think of my latest play?" *

Exquisite pieces of workmanship are the elaborate portable watch-sized sundials designed and made in Europe between the 13th and 18th centuries. In addition to a compass for orientation, some contained as many as fifteen devices, including dials for determining the nocturnal hour by either the moon or certain stars; an adjustment for changes in latitude; a diagram showing planetary positions; and a contrivance for ascertaining the time when the sun and moon would rise and set. *

For Sale: A car in first-crash condition. *

Surprising as it may seem, the fragrance of flowers is a real substance, so real, indeed, that it can be photographed. And, in the laboratories of Grasse, on the French Riviera, it is actually weighed. This fragrance is a kind of ectoplasm invisible to the human eye. It rises from minute droplets of essential oils that exist sometimes in petals, sometimes in leaves, stalks, roots, seeds, bark, fruits, and stems. So potent is it, indeed, that scientists are of opinion that even more than colour, it attracts pollen-carrying insects. *

It has truthfully been said that a woman may put on a riding outfit and never go riding. She may put on a bathing suit and never go swimming. But when a woman puts on a wedding frock she sure means business. *

A recent story from Paris is to the effect that one Robert Picot was carried into the courtroom on a stretcher to answer charges of stealing. During two solid hours

(Turn to page 62.)

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[Page 4, March 24, 1951.]

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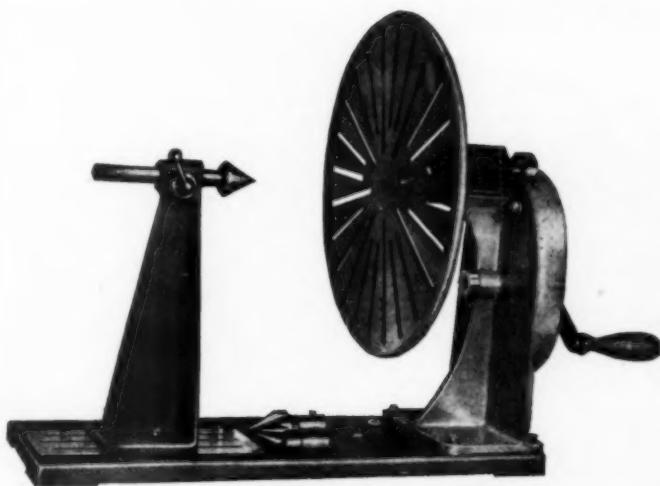
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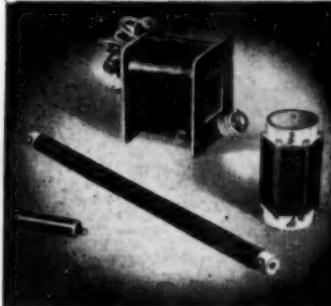
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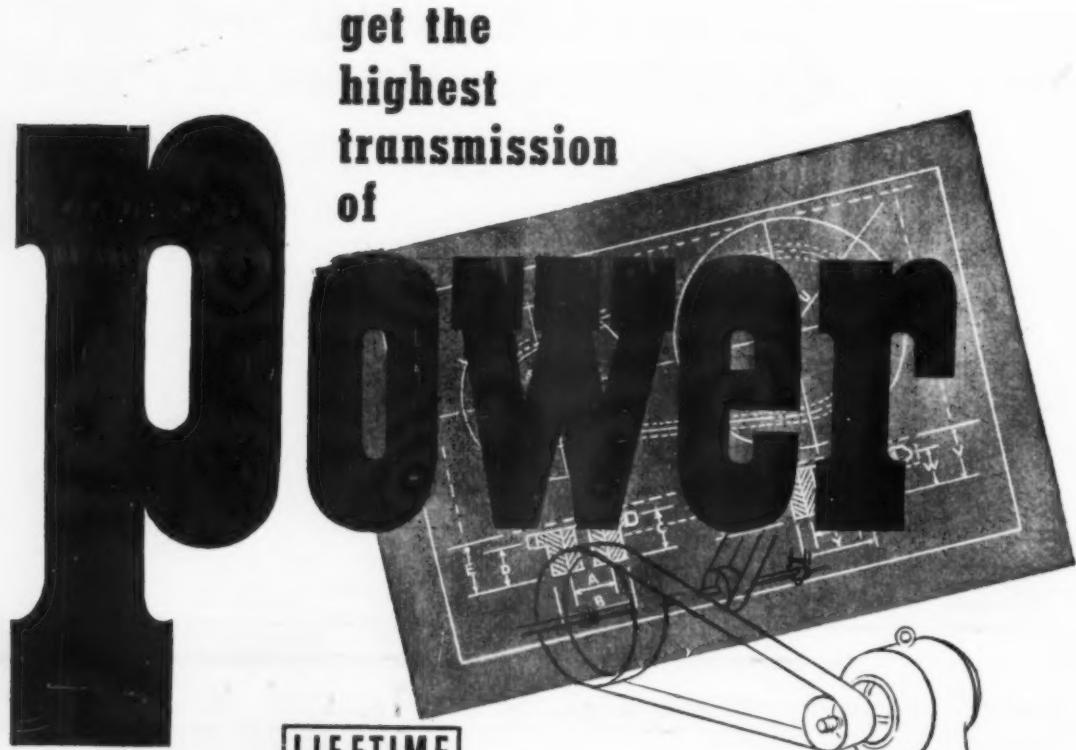


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[Page 8, March 24, 1951.]

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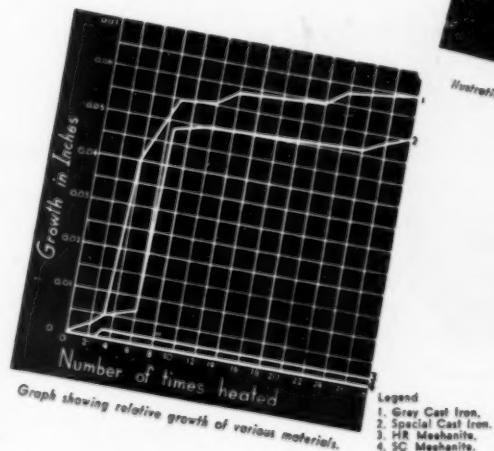
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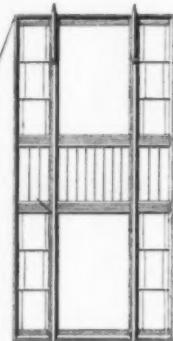
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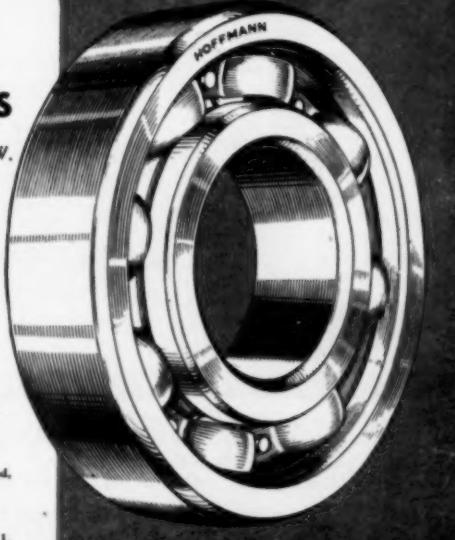
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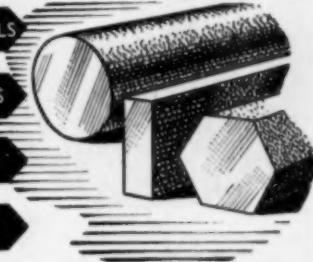
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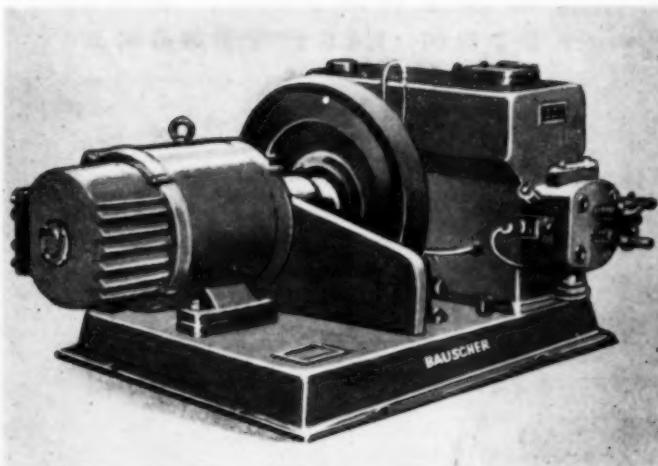
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Industry must be protected against expensive power cuts and industrial strikes at all times. **Before winter and REALLY acute CUTS IN POWER start, instal an Independent Power Plant.** The "BAUSCHER" 4- and 6-cylinder 4-stroke cold starting diesel Generating Sets are excellent, embodying the latest developments in design and the very best material at the *lowest possible cost*.

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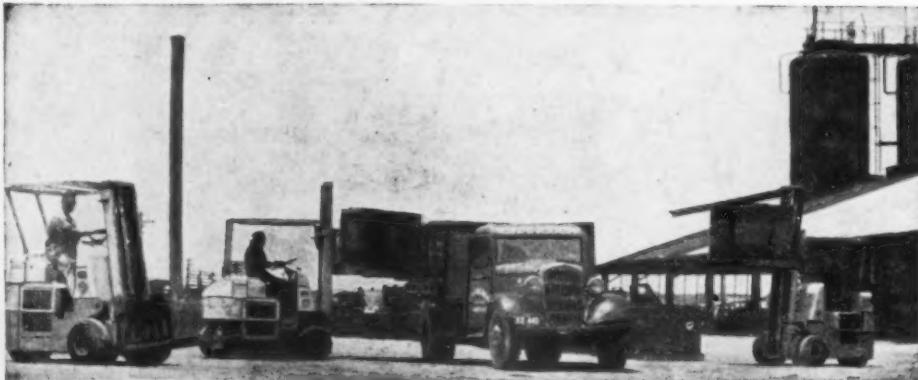
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- ★ ★ ★ ★ ★ ★ ★
- ★ **The only Fork Lift** ★
- ★ **Trucks with all** ★
- ★ **the Features!** ★
- ★ Capacities 3,000, 4,000, 5,000 and 6,000 lbs. Three wheel suspension, with dual pneumatic tyres, gives perfect balance and a smooth ride on any surface. Lifts and lowers while turning and manoeuvres in a 10 ft. alley for right-angled stacking. Turning radius 70ins.
- ★ Coventry Climax 4 cyl. petrol or diesel engines. Electric starting. Full range of special handling attachments.
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COVENTRY CLIMAX Fork Lift Trucks have completely eliminated manhandling of drums at B.O.R.A.L. (Bitumen and Oil Refineries (Aust.) Ltd.), Bunnerong, N.S.W. At the drum storage, 4 empty 44-gal. drums are placed on each pallet. From then on, through all operations of filling, stacking, sorting, and loading on to outgoing trucks, the drums are not again lifted by hand. Potential output is 50,000 tons of bitumen per year. Present daily tally of 800 drums (160 tons) is entirely handled by only 4 Coventry Climax Fork Trucks.

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Thor, for 56 years the *preferred* name in portable power tools for industries of all sizes, now contributes the "Silver Line"—the *only* really new and *modern* development in the tool industry. It is your best solution to today's demand for new labor-saving and cost-reducing methods of efficient production. Shown in the illustration are the first 22 models of the new "Silver Line" . . . more are being designed. All models are of compact, light-weight, long-service construction, and have amazing power and all the extra Thor features which give you faster production at lower cost. See your Thor distributor for a convincing demonstration. Independent Pneumatic Tool Co., 330 West 42nd Street, New York 18, N.Y., U.S.A.

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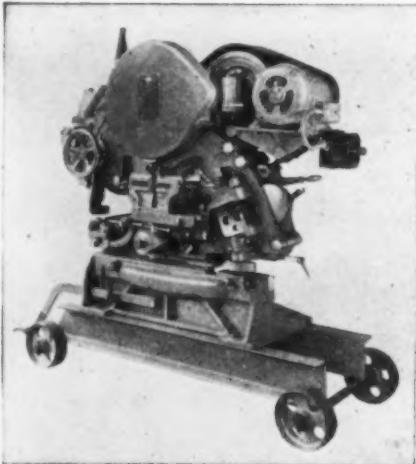


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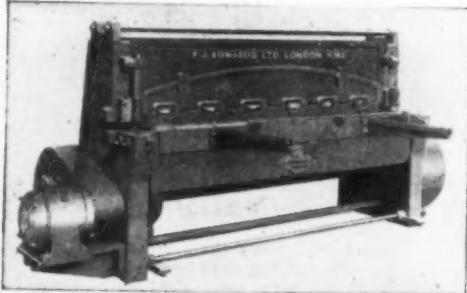
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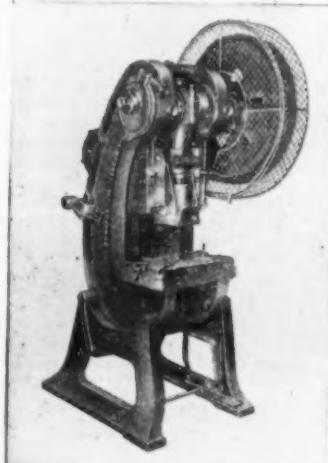
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PAGE NINETEEN

MARCH 24, 1951.



Profits in Relation to Prices Pros and Cons Discussed

In these days of inflationary spirals, there is an almost universal tendency to blame company profits for the high prices of commodities in daily use. This fallacy arises from two main causes. Firstly, the inability of the average man to assess accurately the interplay of the one on the other. And, secondly, the failure to appreciate the true, rather than the apparent, level of present-day profits.

THE misconceptions obtaining at the moment as to actual profit levels are undoubtedly traceable in the main to sensational newspaper reports of so-called "record" profits, plus the subtle propaganda advanced by airy doctrinaires. Generally speaking, the newspapers refer to the total money profits of an enterprise rather than to the profit made on each unit produced. As is well understood by the practical business man, the total profit is by no means an accurate yardstick wherewith to measure the actual size of profits, unless this total is considered in relation to the volume of sales and to the amount of capital invested in the undertaking.

This aspect of the question was emphasised by the "I.P.A. Review" in its able discussion of prices and profits in the latest issue. By way of illustration, it cited the following example: "A motor-car distributing firm selling, say, 10,000 cars will naturally make a great deal more profit than if it sold only 1,000 cars, other things being equal. But that, by itself, surely, is no reason for angry criticism of the firm and its profits. The community is clearly much better off when it is in a position to purchase 10,000 cars than it would be if only able to buy 1,000 cars. The real test of whether the motor car company's profits are excessive is the amount of profit on every car sold. If it sells a great number of cars it may make good profits even though the rate of profit per car is comparatively small."

As the "Review" stresses, the major concern for the harassed purchaser is not so much as to whether profits are higher than they should be, but rather the connection between these profits and the prices he is called upon to pay—the very core of the situation being whether or not profits constitute a large part of the ultimate selling price.

The "Review" affirms that the only wise approach to the issue is to forget temporarily the isolated instances of "excess profits, and to survey the whole national economy as presented in the aggregate statistics prepared by the Taxation Commissioner, the Commonwealth Statistician, and the Commonwealth Bank. It contends that the most accurate presentation of the items making up the cost of goods and services sold to the Australian people is the 1949-50 National Income Estimate as prepared by

the Commonwealth Statistician for members of the Federal Parliament. "These estimates," says the "Review," "show the division of the proceeds of the net sales of goods and services (after paying for imports) made by all the trading enterprises (financial enterprises such as banks and mutual life assurance companies are excluded), amongst all the people and institutions who contributed their property and their labour and skill to the national production stream. Taking the first post-war year, 1945-46, as a base, it is relatively easy to ascertain who have profited most from the great rise in the value of sales from £1,243m. in 1945/46 (just before controls were relaxed) to £2,422m. in 1949/50." (Obviously, not all of this increase derives from higher prices; a goodly proportion of the rise is attributable to a greater volume of output.)

Here are the comparative figures:—

DIVISION OF THE PROCEEDS OF TRADING ENTERPRISES BEFORE PAYMENT OF INCOME TAX.

	1945/6	1948/9	1949/50	1945/6 to 1949/50	Increase.
	£m.	£m.	£m.	£m.	%
1. Employees	537	867	965	428	80
2. Farmers & Unincorporated Businesses	250	569	730	480	192
3. Governments	132	216	257	125	96
4. Companies	134	215	230	96	72
5. Property Holders	14	114	121	27	29
6. Depreciation Funds	60	94	125	65	108
7. Government Under takings	36	2	—6	—42	—
Total	1243	2077	2422	1179	95

This table makes it abundantly plain that far and away the greater share of the proceeds of production was paid to the workers, both of brain and of muscle, and not to employers and property holders.

The "Review" points out, moreover, that the statistics prove the validity of the contention of the Commonwealth Bank in its latest report

that "while part of the increase in prices (over the last year) was directly or indirectly attributable to higher prices for imports and exportable products, much of it appears to have been due to the continued pressure of internal demand on domestic production operating largely through increased pressure for, and willingness to grant wage increases." In these circumstances, it may well be asked: How can profits be blamed for the increases in prices between 1948/9 and 1949/50 when company income increased by only £15m.? The Bank supplies the further interesting information that profits in manufacturing industries as a percentage of shareholders' funds increased from 6.3 per cent. in 1946 to merely 7.8 per cent. in 1949. Preliminary estimates suggest a similar figure for 1950. "It is a fair inference to draw from the Commonwealth Bank data," concludes the "Review," "that profits in 1950 though higher than in 1946 are still not so much higher as to invalidate the general conclusion that profits in manufacturing, in excess of 5 per cent. on share-

holders' funds, are an insignificant element in the total cost of manufacturing output."

If facts and figures such as these could be circulated throughout the land, surely the majority of intelligent Australians would rid themselves of the false ideas on profits which at present hold all too powerful sway. For they would enable them to realise that profits are by no means the basic causes of to-day's inflationary troubles—that even if the low rates at present obtaining were eliminated, such elimination would not effect a reduction in the cost of manufactured products by even so much as 2d. in the £.

Profits must cease to be regarded as evil and vicious in themselves. Rather must they rightly be deemed the legitimate payment for managerial ability—the just reward for the vision, the skill, the planning, and the courage to take risks that are the cornerstones of successful modern enterprise.

Pithy Jottings of Industry and Industrialists

SWIFT MANAGING DIRECTOR GOES ABROAD.

Mr. Charles V. Treloar, Managing Director of Swift and Company Limited, and Mrs. Treloar, left by air on March 17th on an extended business tour of U.S.A., Canada, the United Kingdom, and Europe. It is anticipated that they will be away until the end of this year.

CANADIAN VISITOR FOR CARR FASTENER CO.

Mr. Harold S. Beddoe, President of the United-Carr Fastener Co. of Canada Ltd., which has its headquarters at Hamilton, Ontario, will visit Australia during April.

He is due to arrive in Sydney by air on April 7, when he will be met by the Managing Director of Carr Fastener Co., of Australia Ltd., Mr. F. A. Pattenden, who will travel from the Australian Company's head office and factory at Royal Park, South Australia, to meet the Canadian visitor.

They will spend a few days in Sydney and then in Melbourne, and will arrive in Adelaide on Monday, April 18th. On the following Saturday, April 21st, a dinner will be tendered to Mr. Beddoe, which will be attended by the Australian Board of Directors and 35 key personnel of the Australian plant.

PROMINENT WESTINGHOUSE ENGINEER ARRIVES FROM U.S.A.

Mr. J. J. Jacobs, engineer in charge of Power Generating Plants, arrived in Sydney recently from the Westinghouse Electric International Company, New York. The purpose of his visit is in connection with the coal and oil-fired unit power plants recently purchased by the Electricity Commissions of New South Wales and Brisbane.

Following on the recent visit of Mr. N. D. McManigal, Vice President of Westinghouse Electric International Company, the company arranged for Mr. Jacobs to fly to Australia in view of the extreme urgency of the power problem in this country.

NEW PRESIDENT OF S.A. CANVAS GOODS MAKERS.

Mr. Colin Kleinig, who has been appointed President of the Canvas Goods Manufacturers' Association of S.A., in succession to Mr. John A. Flavel (who held the office for 7 years), is a young man who has made a rapid rise in business in Adelaide.

He is manager of Murdochs Limited, having occupied that position for 5 years, beginning not long after his discharge from the A.I.F. in December, 1945. He had enlisted in June, 1940, as private and rose to the rank of captain. He had three years' service in New Guinea and Borneo, mainly with a supply platoon of the Army Service Corps, and finally with the British Military Administration in British North Borneo.

Mr. Kleinig has been with Murdochs for 18 years in all, and has been a council member of the Adelaide Junior Chamber of Commerce for 3 years. He was a member of the trade and industry section of the Junior Chamber in 1950, and is now

service members of that Corps and members now serving.

AUSTRALIAN MANUFACTURES AT THE ROYAL SHOW.

The attendance at the Jubilee Year Royal Show, Sydney, is expected to eclipse that of all its great predecessors, these dating back, so the historians estimate, to 1822.

The display of Australian manufactures, in harmony with the



Mr. C. Kleinig.

chairman of the newly formed civics section. He is a member of the Adelaide Rostrum Club No. 3, and was secretary of that Club last year. He is President of the Royal Australian Army Service Corps Club, formed for both ex-

POSITION WANTED

PROFESSIONAL ENGINEER, B.E. (Elect. Civ.), 21, 10 ft. 6 in. 7 ft. 2 in. Single. Seeking Consultant of firm of Consulting Engineers, New Zealand. seeks enquires from the commercial field. Experience in rural and metropolitan electricity power distribution; industrial electrification. Essential that housing accommodation be obtainable. Reply in first instance to "ENGINEER" c/o Catts-Patterson Co. (N.Z.) Ltd., P.O. Box 2120, Auckland, N.Z.

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Large and expanding Manufacturing Engineering Company in Western Australia requires the services of a qualified Metallurgist with Iron and Steel foundry experience to assume control of our Chemical and Physical Testing Laboratory.

Applicant must have had experience in fault-investigation problems in general engineering, and be competent to conduct Metallographic and Radiographic investigations, for which the Laboratory is fully equipped to undertake.

The Salary Range will be (approx.) £1,000 per annum, according to qualifications, and subject to Basic Wage Adjustments as they occur, and annual review. The Company would be prepared to reimburse the successful applicant for his transport costs on completion of twelve (12) months' satisfactory service.

Written applications, giving fullest possible details, to:

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industrial developments taking place is on a larger and even more impressive scale. As well as the station and farm machinery and equipment, there is a wide diversity of commodities in daily use, all of them bearing testimony to the rapid advances Australia is making in virtually every field of secondary production. These articles, together with the magnificent displays of live stock, of station and farm and orchard products, bear testimony to the fact that Australia's primaries and secondaries, working in close collaboration, continue their splendid forward march to bigger and better achievements.

VISIT OF BRITISH ELECTRICAL EXECUTIVE.

Mr. L. Gamage, vice-chairman and managing director of the General Electric Co. of England, is at present paying a visit of inspection of the Australian offshoot, the British General Electric Co. Pty. Ltd. Mr. Gamage said on arrival that the export trade of the parent company is valued at approximately £16 million a year, which figure it is hoped to maintain. "The English company," he said, "employs 60,000 hands, of whom about 6,000 are part-time workers. The latter are mainly married women, working from 5 p.m. to 10 p.m."

WILL VISIT ENGLISH PRINCIPALS.

Mr. C. A. Daley, Sales Director of H. Rowe & Co. (Aust.) Ltd., left for England aboard the S.S. "Strathnaver" on 20th March. He will attend International conferences of some of his Company's overseas principals, including The Rheostatic Co. and Evershed & Vignoles Ltd. He will also visit Trade Fairs in England and on the Continent, and will be studying current overseas trends in electrical engineering and merchandising and the availability of raw materials.

NASH-KELVINATOR CHIEF ON AUSTRALIAN VISIT.

Australia has an extremely high standard of living which has brought with it problems similar to America, a vice-president of Nash-Kelvinator Corporation (Mr. Howard A. Lewis) said in Adelaide recently.

Mr. Lewis, who comes from Detroit, Michigan, U.S.A., was making his first visit to Australia to study economic and sociological conditions on behalf of his company. He spent much time in S.A., with Mr. W. Quesle, managing director of Kelvinator (Australia) Ltd.

"We must plan not just for two or three years ahead, but if necessary for a quarter of a century ahead," he said.

Mr. Lewis will visit all States during his six weeks' stay in Australia.

Describing American car quotas as "skimpy, to say the least," Mr. Lewis added he hoped to be able to see the appropriate authorities if some improvement could not be effected. His company manufactures Nash cars.

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Viewing
Industrial
Developments

Around & About the FACTORY

4 digest of new factory
and plant construction,
additions, alterations and
improvements, and oper-
ating news of Australian
industry.

A Tool For Every Work-shop

The M. A. S. Stud Driver and Extractor

There would be few engineering feats, fewer machines and even less mechanical progress were it not for the ingenuity of man. For ingenuity has played a major part in industrial development down

under any circumstance. At the base of the tool is a gripping device, enclosed in a protective housing, with a movable gauge. The tool is dropped over the stud. A turn to the right will set a stud

make sure, even with unskilled hands, that the grip takes place where desired and nowhere else. The "plunger" has no effect on the gripping power of the tool. For casual use, especially for extracting old studs, it may be discarded. Less than a quarter turn starts the gripping action and releases as soon as the turning is finished.

Briefly, the tool is made with a body cage at one end. This contains three hardened steel rollers which float freely within a trefoil contour recess milled into the body. When the unit is slipped over the stud, its rotation by means of the two tommy-bars, forces the rollers against the stud,



This ingenious stud driver and extractor is made in several sizes.

the years, and without it there would have been stagnation. One instance of the application of this seventh sense is the stud driver and extractor illustrated on this page. It is the M.A.S. tool, manufactured in England. Hawker, Richardson & Co. of 209-215 William Street, Melbourne, are the sole agents for Australia.

The tool, simple as it is, is operated in very much the same manner as a socket wrench or box spanner. It is sturdily constructed, designed to withstand rough usage

into the work and one to the left, if the stud is to be extracted. The tool is so designed that it grips either way and the greater the effort on the T handle the stronger the grip.

A feature is that the tool releases itself automatically as the operator ceases turning the handle.

A screwed axial "plunger" fitted to the top of the tool and extending its full length, provides a means whereby the operator can limit the depth of penetration of the stud into the tool in order to

which is thus firmly gripped at the three points. Therefore, the greater the turning effort, so stronger the grip.

It is made in a number of sizes, but the long sleeve model in two standard designs has a size of $\frac{1}{4}$ in. with a length of 7 in., a diameter of $2\frac{1}{2}$ in., with a weight of 6 lb. 12 oz. The other is 1 in., with the same length and a $2\frac{1}{2}$ in. diameter, and weighs 7 lb. 4 oz. The firm makes any of its tools to special requirements or design.

All in all, the stud driver-extractor seems to be not only case of ingenuity applied to engineering, but a useful and almost necessary tool in every workshop.

Gravity and Pressure Diecasting

"Efco" Builders' Hardware and Refrigerator Fittings

Efco was originally established in a small building, 30 ft. x 50 ft. with four employees. To-day their factory premises at 106 Prince's Highway, Arncliffe, N.S.W., cover an area of 1½ acres, and the staff now numbers nearly 300. These works began as a foundry, but vast changes have taken place in the character and volume of their output. They have developed along the lines of specialisation in pressure diecastings in zinc base, aluminium and brass, and gravity castings from aluminium in permanent moulds.

It is claimed that at least 80 per cent. of Australia's requirements of refrigerator fittings are produced in the Efco factory. These fittings include panel, side and exterior mounted locks and handles and hinges as well as heavy hardware for butchers' coolrooms, etc.

Another section responsible for a major portion of the total output, is concentrated on the manufacture of builders' hardware lines. Thousands of individual items have been produced in this section, especially during the past few years as the demand for all building equipment has continued to soar. This range of products includes doorknobs and plates, door handles of all types, casement stays and fasteners, spring hinges, barrel bolts, indicator bolts, cupboard handles, cabinet hardware,

transom catches and openers, and many other associated lines.

All production operations are carried out on the premises. In the words of an Efco executive, "We get the metal in ingot form and we carry the production through to finishing and polishing, wrapping in tissue paper, and the final packing in appropriate containers."

A production achievement in which the company takes special pride is an aluminium window frame measuring 2 ft. 10 in. x 2 ft. 4 in., made for air-conditioned railway carriages. Previously this particular fitting had to be made in two sections which were subsequently welded together. Because of its large area and light section it presented a most difficult gravity job. Now these are made quite successfully.

In addition to making and marketing the well-known range of "Efco" products, the facilities and knowledge of this organisation are always available to meet trade requirements within the capacity of their non-ferrous foundry, drawing office, tool room, electro-plating and finishing section, and their lacquering and spraying and assembly departments.

These activities are of real industrial interest, and though we have

**Turn to page 24.*

CONTRACTORS TO AUSTRALIAN AND NEW ZEALAND GOVERNMENTS

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In buying JULES JORIS Diamond tools, you are obtaining the knowledge and experience of three generations of Diamond experts

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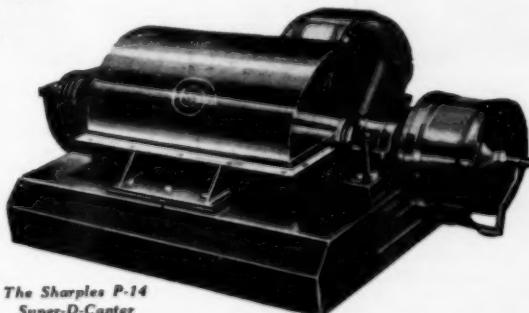
Agents — S.A.: Gilbert Lodge & Co. Ltd., cnr. Morphett and Franklin Streets, Adelaide. W.A.: Western Machinery Co. Pty. Ltd., 494 Murray Street, PERTH. Phone: BA 2495.

TALLOW REFINERS — Modernise with SHARPLES EQUIPMENT!

Gravity settling, with its attendant boiling, salting, draining off, reboiling, etc., is an inefficient and obsolete method of refining . . . the process is haphazard and costly in time and space.

By the Sharples method, tallow is refined as fast as it is released from the cooked material. Expelled or extracted tallow, dry or wet rendered, is pumped direct to a Sharples Super-D-Canter for clarification. This is a continuous solids discharge centrifuge with a helical screw conveyor inside the bowl for the discharge of solids.

The clarified effluent is pumped to CONTINUOUS WATER-WASHING equipment and fed direct to a Sharples Super Centrifuge which discharges completely clarified and dehydrated tallow with a moisture content of 0.1% or more as required.



The Sharples P-14
Super-D-Canter

The Sharples Division
Gilbert Lodge & Company Limited

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Centrifugal and  Process Engineers

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The Sharples Continuous Centrifugal process saves labour, steam and space — standardises moisture content . . . keeps FFA low. Water washing plus centrifugal separation produces brighter, cleaner tallow with improved odour . . . increases yields, since no tallow is lost in intermediate water layer. Continuous centrifugal tallow refining can step up your production — save you time and money. Let us engineer a Sharples plant for your tallow.



(Continued from page 22.)
only referred briefly to them here, we propose to include in "The Manufacturer" in the near future a fully

illustrated article describing the ramifications and progress of the Efeo organisation.

Where Time is the Factor

Measuring It for Industry

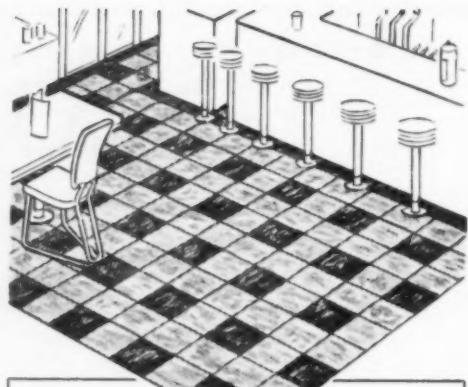
A factory at 145 Bouverie Street, Carlton, Victoria, reminds the stranger of being the original "clockmaker's shop", so musically interpreted is that popular orchestral piece. There are delightful chimes, resonant bells and tuneful sounds that entrance. But there is also an atmosphere of quiet efficiency and care of detail. For it is a highly mechanised and skilfully conducted place which for its basis of production and business there is clockwork. Added to its unique activity there is the claim that it is the only one of its kind in the Commonwealth.

The firm of Ingram Bright Pty Ltd. is officially nominated a clock-making firm. But clocks are but part of its objective, for it makes almost everything and

anything that goes toward measuring the fleeting footsteps of Father Time.

Among the instruments it makes are a number for processing work. For example, it makes one unit that when set for a pre-determined period on, say, an oven in which enamel is being dried, rings a bell at the end of that time.

It also makes delicate gauges in a wide range. Among these are gauges used by the Victorian Water Commission, the State Electricity Commission and the Water Conservation Board of N.S.W. to determine the varying flow of streams. Down among the more delicate and sensitive instruments are such things as a radiosonde, a switch used in meteorological calculations.



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Manufactured by Colonial Sugar Refining Co. Ltd.
Building Materials Division.

The company, because of its widely known experience in "clock-making" for more than 60 years, has many calls on its ingenuity to develop some strange and previously unheard of requirement. But it concentrates on industrial problems mainly. It can, and has, provided a device that tells the factory executive just how efficient his carrier belt system is working and makes time clocks for checking employees' daily attendances as well as supplying costing clocks.

Everyone who has visited Geelong is familiar with the clock in the tower of the T. & G. building and the two figures that emerge from the tower as the hour strikes. Ingrams Bright Pty. Ltd. designed and built that clock 12 years ago. The firm has built giant chiming clocks for post-offices and other public buildings all over Australia and New Zealand. It has gone to the other extreme and cut and made gears for cameras and other instruments that are now with the Antarctic expedition at Heard Island. The University of Melbourne fre-

quently brings some of its mechanical and instrument troubles to the firm.

Industrialists and others consult the company's managing director, Mr. Ken Manallack. They ask him to solve their problem of checking production; provide them with a device that can tell accurately the rate of production on some article or how much time is used on this or that. The company fills the bill. But, as Mr. Manallack remarked, while they "get some funny things to do" they always seem to manage to supply the want.

Rubber Reclamation

Big Sale for Rubber Heels and Plugs

Rubber must be well-nigh indestructible. Frank Killenig, rubber reclamation expert of King Street, Newtown, N.S.W., said recently that there is never any shortage of material for his products. As fast as rubber goods are discarded he re-processes them and makes them into other rubber



goods; when they wear out he again re-processes them, and so it goes on.

His main lines of production are "Treble-wear" rubber heels and "Treble-seal" rubber plugs. He makes thousands of them to be distributed throughout Australia. The process of extracting the rubber from the countless dis-used goods that come into his factory is not simply a matter of melting them down and pouring into new moulds.

The original manufacturer of the goods added chemicals to the rubber to bring about a certain pre-determined quality and type of rubber product. The reclamer's job is to remove those chemicals and then add others to suit his own purpose.

The rubber is stripped down and foreign materials—such as the webbing in motor tyres—are removed. A lengthy process of grinding and milling then takes place until the rubber has been reduced to flour. It is then rolled into sheet form and is moulded under pressure and heat to its new form.

Mr. Klienig told a representative of "The Australasian Manufacturer" that in the long run it is the skill in baking that counts.

Mr. Klienig tells us that his products are to be seen in almost every chain store throughout the Commonwealth. The "Treble-seal" plugs do in fact have three seals. These are formed by three rings around the edge of the plug, similar to the rings on a piston. The name Klienig is not unknown in motoring circles, so perhaps Frank

Klienig's long study of motor pistons is responsible for the design of the plug.

A new product amongst the many others issuing from this factory are rubber blocks to be used by jewellers as moulds. The rubber is first moulded around the pattern of the ornament it is desired to make. The pattern is then removed leaving a cavity in the rubber in which the molten precious metals are poured.

Mr. Klienig welcomes inquiries and will be glad to submit quotations.

NEW EARTHENWARE COMPANY.

Several well-known men in the pottery, earthenware and building industries of South Australia are directors of a newly-formed company, Earthenware Industries Ltd., which has an authorised capital of £100,000.

The company will erect buildings and kilns at Hawker Street, Brompton, on the site formerly known as Metropolitan Brick Works, which has already been acquired. It will also develop clay leases at Modbury.

It is proposed to engage in the manufacture of earthenware pipes and fittings, glazed tiles, roofing tiles and refractory blocks for boilers and furnaces.

In regard to those of its products which are associated with housing, the company aims to work in step with the drive for building of more homes.

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Flexible Bearings

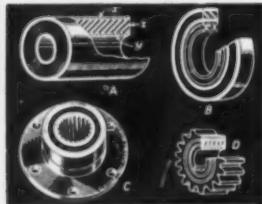
Take Up Misalignment

The patented flexible bearings, illustrated, provide a simple and effective means of absorbing vibration and shock, eliminating noise, and taking up misalignment in pivoted joints, shafts, couplings and other machine elements. Since the flexible element is rubber, electrical insulation is also provided where this is necessary, and the need for lubrication of the bearing is obviated. These bearings, in addition to being available as standard types in a comprehensive range of sizes up to

tacting surfaces, provided the angular movement between sleeve and bush is kept within prescribed limits. The maximum allowable angular movement depends largely upon the rate of oscillation, and may be as much as 70 deg. on each side of the neutral position. For a low rate of oscillation, however, this movement may require to be limited to 30 deg. When the bearing is applied to an oscillating member the rubber is subjected to torsional stretch, but numerous applications are possible with the elastic medium in compression or tension, in combination, if required, with torsional stress.

For special applications, the bearings may be provided with keyways, splines, tongues or slots for location or driving purposes, or with solid threaded studs in place of inner sleeves to obviate the need for special fixing bolts. Alternatively, the inner sleeve may take the form of an oil-retaining bush for direct contact with a rotating shaft. For applications where the bearing is liable to come in contact with oils having a high ozone content, "Clayprene," a synthetic elastic material, is employed in place of natural rubber. Bearings can also be supplied capable of withstanding comparatively high temperatures, and with specially-formed elastic elements to provide for universal movements.

Some typical applications of these flexible bearings are shown at B, C and D. The arrangement at B provides a flexible housing for a ball race, while at C a flexible bearing is shown incorporated in the boss of a serrated shaft coupling to absorb shock and compensate for misalignment between driving and driven shafts. The bearing can also be advantageously employed, as shown at D, in a gear which is subjected to shock loads, for example, in a power press drive, and it is stated that



Applications of the flexible bearings described.

1½ in. outside diameter by 4 in. long, can also be supplied for a wide variety of special applications.

As shown at A in the illustration the bearing in its simplest form comprises outer and inner sleeves x and y, and an elastic element z in the form of a seamless tube of rubber. When assembled, the rubber is pre-stretched in such a manner that it is in a permanently active state, attempting to revert to its original inert shape. Thus a constant radial pressure is exerted within the rubber which gives a frictional or mechanical bond between the rubber and metal sleeves to ensure that, in operation, no slip occurs at the con-

such an insulated gear may have four times the life of a gear of the conventional solid type. Another

important application is in resili-ent-mounted, fractional-horsepower electric motors. (2768.)

High - Temperature Creep Testing Machine

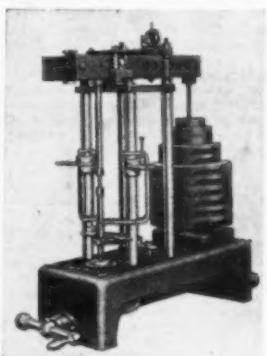
The 1-ton, high-temperature creep testing machine, here illustrated, is intended for preliminary investigations and general routine work. It is of the vertical type, self-contained, and arranged for bench mounting.

Mounted on the cast-iron base-plate are four steel columns supporting the weighing system, and adjustable rests are provided for supporting the furnace. The top and bottom specimen holders, of heat- and creep-resisting material, are respectively connected to the steelyard and straining screw by means of universal couplings. Four terminals are provided for thermocouple leads, these being mounted on a small panel on the baseplate. A further terminal is provided for earthing. The diameter of the specimen over the effective length is 0.1785 in., and the area 0.025 sq. in.

The straining screw is raised and lowered by means of a single bevel reduction gear inside the baseplate, through either of the ball handles, which rotate a phosphor-bronze nut. Adequate adjustment is provided to cover 1- and 2-in. long specimens. The straining screw is prevented from rotating by guides on the uprights. A ½-in. motion of the ball handle gives approximately 0.001 in. movement of the specimen.

The weighing gear comprises a 10 to 1 steelyard or weighbeam, on the tail end of which is hung a weigh rod and pan. The steelyard is in balance at its topmost position with the pan empty, so that the state of balance can be checked at any time. Loadings as low as 0.0125 ton, or ½ ton per sq. in., can be applied, and the proportional weights supplied en-

able any loading between ½ ton and 30 ton per sq. in., in 1-ton per sq. in. increments, to be obtained. The actual weights are marked, also the loads that they represent on the specimen.



½-ton high - temperature creep-testing machine.

Buffer blocks are mounted on the baseplate, so that when the specimen fractures, the load is taken off the steelyard before the latter comes to rest, thus preventing damage to the knife edges. The dial extension indicator is set above the steelyard and has a ratio of 5 to 1. In the topmost position of the steelyard the dial indicator stem is not fully home, so that if, for any reason, such as failure of current during a test, the steelyard rises to its upper stop, the dial gauge cannot

be damaged. The dial increments are 0.0005 in., representing 0.0001 in. on the specimen. The movement at the specimen for the full movement of the weighing lever is 0.09 in.

The extension is measured from the movement of the steelyard, and thus includes the very small amount of creep of the specimen holders. The latter are tapped 2-in. B.S.F. thread. A suitable furnace for a temperature up to 900 deg. C. has dimensions of 7½ in. long by 5½ in. diameter, and can be supplied with temperature controller.

The approximate dimensions of the testing machine are 3 ft. 3 in. long, 11 in. wide, and 2 ft. 11 in. high, and it weighs 4 cwt. (2772).

Vacuum Cold Plate Evaporators

Embodying an exclusive principle of heat transfer through contact of tubing and jacket, the vacuum cold plate evaporator, illustrated, will be of interest to all concerned with processing, storage, and transport of products requiring refrigeration.

The plate, made in various standard sizes, consists of a pair of flat steel sheets welded together round the edges and having set

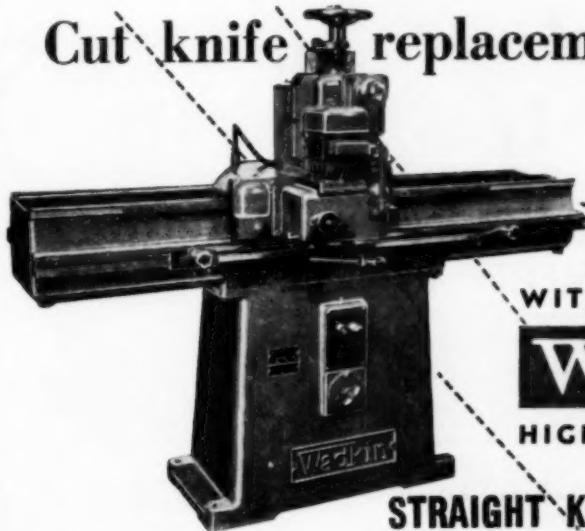


Vacuum Cold Plate Evaporators.

between them a refrigerant coil. The tank so formed is hermetically sealed, the air within being exhausted to a high vacuum so that atmospheric pressure, evenly distributed over the outer surface of the sheets, presses them firmly in contact with the coil. The coil terminals project from the plate, enabling them to be connected to the source of refrigerant; several interconnected plates may be used in a single circuit.

The plates are flat on both sides and may be used as shelves, upon which products are placed for contact freezing, or as gravity air coolers—for instance in cold stores—by mounting them adjacent to walls or ceiling, or by suspending them on edge from the ceiling. They may also be installed against the walls or as divisions in refrigerated display

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Write for illustrated, fully descriptive leaflet 678.

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To aid the chrome tanner and textile dyer still further, **Basic Chromium Sulphate** is available for delivery by tank car, thus overcoming the necessity for converting the **Sodium Bichromate Crystals**.

Chromic Acid, of primary interest to the electroplating trade, and meeting a very strict specification, is yet another of this interesting range. Others include **Potassium Bichromate**, used similarly to **Sodium Bichromate**; **Metachrome Mordant**, for the mordant dyeing of wool; and **Sodium Chromate**, finding use in the manufacture of pigments, corrosion inhibition and textile dyeing.

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cabinets. Defrosting is easily achieved by brushing or scraping.

The application of their plates to insulated vehicles and transport containers used for carrying products which need to be held at low temperatures during transit is

described in a leaflet issued by the makers. The plates for this purpose contain a hold-over medium which provides a "store of cold" for many hours between regenerating compressor operation. [2753].

Bending Tool for Round and Buckle-shaped Workpieces

Shown in the figure is a tool for bending round and buckle-shaped workpieces from covered or uncovered wire, recently introduced. The work is bent round a centre former block which is clamped in



This tool bends round and buckle-shaped workpieces from covered or uncovered wire.

the required position on the slotted base.

In operation, a length of wire is placed between the locating plates A, and the two pivoted levers are rotated by hand in opposite directions, and away from the operator. This action causes the ends of the levers opposite the handles to move the sliding former-block towards the centre former, thus completing the first bending operation. The sliding former-block is automatically held in this position by means of a spring-loaded latch. The direction of rotation of the pivoted levers is then reversed and the bending operation completed by the action of the plates secured to the levers. To release the formed workpiece the knob B is depressed, whereupon the sliding former-block is returned to its original position by the action of tension springs.

The locating plates A are adjustable on the base, enabling the pre-cut length of wire to be correctly positioned relative to the centre line of the fixed former-block. A cover plate (not shown) is fitted to the upper surface of the sliding former-block. [2769].

Machine Removes Oil By Heated Air Current

A new method for removing textile picking and carding oils used in mill processing has been developed.

Research and development men of this company discovered that usual textile oils may be quickly and easily removed from carded or garnet batts and open felts and fabrics by passing a current of heated air through the fibre mass. A reduction in oil content from 8 to 10 per cent. to 1 to 2 per cent. has been obtained. Novel

about the process is the lack of use of any liquids such as water in scouring or solvent in dry-cleaning. Advantages lie in not upsetting or distorting the structural material, in its being a dry process, and in saving of shrinkage of materials.

The patented process of the company may find use in the mattress-filler, cotton- and wool-battling and knit-goods branches of the industry, as well as in the felt-making branch. [2764].

Humidifier Has Self-Cleaning Jets

A new humidifier for textile mill use which uses plant steam and well water—one part steam and six parts water—has been developed.

The solids in hard water are atomized as fine as smoke by the humidifier. Each nozzle has nine jets which have an output of 200 lb. of vapour per hour, a capacity said to be able to take care of 50,000 cu. ft. with a relative humidity as high as 95 per cent. The jets in the nozzle are self-cleaning. Every time the solenoid

valve opens and closes, the jets are said to be automatically cleaned—a feature which helps eliminate maintenance.

Humidity can be controlled by a humidistat and held at close tolerances. At least 2 deg. temperature drop can be expected.

The solenoid valve has a bellows in place of a piston; therefore the valve cannot stick open or closed. All wearing parts are made of stainless steel. The equipment is leased and maintained by the company. [2762].



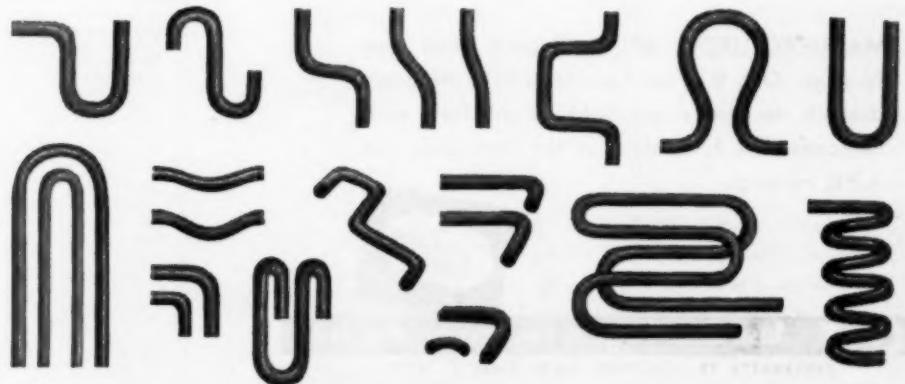
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main hindrances to good production under the old system.

All users of viscous fluids which require heat treatment, whether by cooking, cooling, or both, will gain much the same advantages with this machine. Calico printers, for example, can dispense with the old method of boiling "slurry," either gum and water or starch and water, in a vat, and by an additional process to those outlined above can obtain material of a better consistency and with longer life. In this instance the slurry is first cooked by steam and then cooled by both water and ammonia.

As at present produced the equipment comprises a cabinet standing approximately 7 ft. high and weighing about three tons. It is built of structural steel enclosed in galvanized sheet metal, and requires 7 ft. 4 in. by 5 ft. 3 in. floor space, or, including the pre-cooler unit, 7 ft. 2 in. by 6 ft. 4 in., either dimension much less than the area required by the old large-sized drum and plant. The rotocooler, 42 in. long and with a 12 in. bore, is made of carbon steel fully protected against corrosion by a deposit of nickel, and is driven by a 12½ h.p. motor at 460 r.p.m. Two processing cylinders, 42 in. long with a 10 in. bore, are driven by a 5 h.p. geared motor at 100 r.p.m., while two 6 h.p. motors each drive one of the two pumps.

The plant, says the "Times Review of Industry," has a maximum capacity of two tons an hour and requires approximately 10 tons of liquid ammonia at 15 lb./sq. in. suction pressure. To obtain a smaller output the manufacturers recommend that the best method is to work the plant over a shorter period at its optimum rate rather than to run it under-loaded, although it will nevertheless handle a minimum of 1½ tons an hour economically.

To date, only one size of machine is in production in this country compared with the two or three sizes in the United States but, size for size, it compares favourably with the nearest foreign model. As some indication of the likely demand in Great Britain, the Board of Trade cites the fact that in the past five years two alone, of the large variety and number of firms concerned, have imported between them no less than £39,000 worth of this type of plant which, at a conservative estimate, must represent a dozen or so individual machines.

In respect of possible markets overseas, inquiries have already been received from Canada, Australia, Belgium, France, Brazil, Costa Rica, Persia, Venezuela, Tanganyika and the British West Indies, while one factory in Brussels is already using the machine. Present production is severely limited by space, but the company is building a new factory at Poyle, near Colmbrook in Buckinghamshire. As in the United States, models of differing capacities will be manufactured as soon as the new factory is in full running order and it is expected that production will be sufficient to meet the demand. (2758).

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Mr. J. W. Miller (right) is Managing Director of the Company. He is shown here with the Company Secretary, Mr. A. T. McCallum.



This bright nickel finishing plant cleans, plates and finishes, and eliminates the operation of polishing after plating.

Stamped Metal Products

Sydney Company Boosts Production of Wide Range of Manufactures

Not all the companies currently contributing to Australia's fine industrial standing can look back on a history covering the entire fifty-year period of which we as a nation are so conscious at the present time.

The majority had their beginnings within the framework of the last thirty years, and their growth and expansion has coincided with the pronounced upward surge of Australian industry during that time.

REVIEWING histories is quite the thing to do these days, and many industrial organisations, with justifiable pride, are noting the progress they have made.

On a recent occasion we welcomed the opportunity of dipping into the history of a company which has come a long way in twenty years—Hipkiss, Kershaw (Aust.) Pty. Ltd., of Maddox Street, Alexandria, N.S.W.

In the sum of qualities for major industrial value, mere length of service to industry or sudden dazzling performance are of less importance, in the final analysis, than steady, consistently high quality production.

Since 1931, Hipkiss, Kershaw (Aust.) Pty. Ltd., have been manufacturing stamped metal products. In twenty years the range and extent of their production has expanded enormously: the quality of their work has remained as it was in the beginning—the highest obtainable by skilled methods and modern machinery.

At the Maddox Street factory we watched production of some of the well-known HK goods and saw many others; some at various stages of manufacture and others

packed for distribution to retail houses.

They include: brass and steel chandelier chain; brass bead chain and clips; brass paper fasteners; iron and brass jack chain binders; twisted link (dog) chain; steel electrician chain; mirror or picture chain; cistern pulls; pillar bolts; various types of cupboard catches;

also screen door handles; butt hinges; semi-concealed hinges; steel or brass barrel bolts; extruded brass barrel bolts; curtain rod brackets and rings; expanding spring curtain rod; curtain rod holders; spear heads; screw cups; angle pin picture hooks; cup and square hooks, shouldered and unshouldered; brass sail eyelets and rings; sash lifts; brass glass plates; miscellaneous wire forms and stamped smallware.

Prior to 1931, we were informed, brass paper fasteners, chandelier chain, jack chain, ball chain, barrel bolts, cupboard catches, cup hooks and curtain rings were not manufactured in Australia.

These, and similar items, were among the manufactures being sent to Australia by two English companies, Hipkiss & Co. and Kershaw & Co. They were the first products of Hipkiss and Kershaw Ltd., the Australian company formed in 1931 and operating with plant and material from the parent company's factories in England.

Over the years, English control of the company, at first absolute, has been superseded by Australian capital and control. Australian materials, of course, were adopted as soon as they were readily available. Some firms now prominent in their contributions to Australian industry received their first orders from H.K. for material previously imported, a business association which has lasted over the years.

The company's changeover to Australian control is said to have begun with the appointment of the late Mr. G. S. Blackmore as man-



A stage of the bright nickel finishing. Chain is being placed in the special plating tank after the preparatory cycle of cleaning.



One of the Company's multisindle drilling machines used to drill and countersink screw holes in bolts, sash lifts and sundry lines.

aging director, early in the company's history.

The name the company bears today—Hipkiss, Kershaw (Aust.) Pty. Ltd.—is the only remaining link with the English founders.

These facts were given us by the present managing director of the company, Mr. J. W. Miller, who has been closely associated with the firm for many years. For a period of three years he was company secretary, until he left to take up the appointment of general manager of Harry Peck & Co. (Aust.) Pty. Ltd., when that Australian offshoot of the British company was newly formed. He returned to Hipkiss, Kershaw (Aust.) Pty. Ltd. as managing director when Mr. Blackmore's ill-health led to his retirement in 1949.

A programme of considerable expansion had long been planned for the company at this time. Production was steady. Distribution of the company's products was in the hands of Hipkiss Sales Pty. Ltd., an organisation formed a year earlier.

Mr. Miller brought to his new job unlimited vigour and a determination that expansion and development should proceed along sound lines and with a minimum of delay.

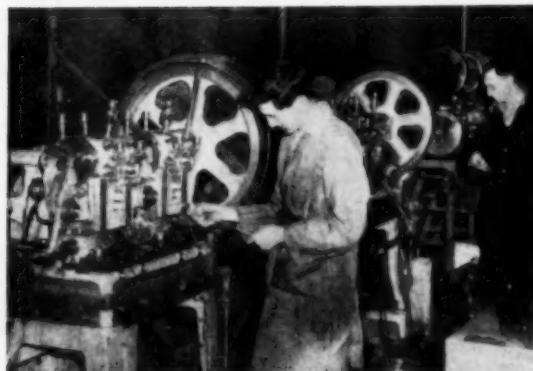
Under his guidance came new machines, new lines, increased output, modern distribution methods, improved finishing, and the development of special automatic machines by H.K. and associated companies.

This latter feature of the company's development is illustrated in the machine used in the manufacture of ball and bead chain, shown on this page. These ma-

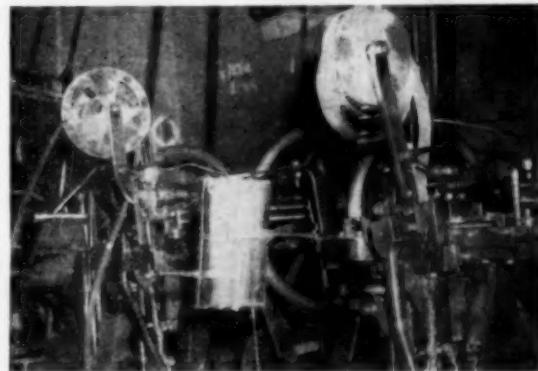
chines were designed and built by an associate company's engineering staff, and were described to us as "highly specialised and delicate in construction and operation". Brass strip and wire is fed automatically into these machines, and the chain forms in a continuous length which, on passing out of the machine, is measured into 36 ft. lengths by means of a specially designed revolving board. Several different sizes can be made by each machine. The chain, being small but comparatively strong, has many uses, including bath, basin, mirror, picture and light fittings, jewellery accessories, and in many spheres of manufacturing where small chain is required as a component.

A large proportion of the new high speed automatic machinery at this progressive factory is for the production of either ball chain or paper fasteners, and we understand is a considerable improvement on the machinery used originally, both in method and in speed. The greater quantities now obtained, as a matter of fact, enables the company at last to meet the Australian demand for these fine products.

The manufacture of chandelier chain also is shown in one of our illustrations. Brass strip in coils is fed automatically into the machines, and the chain forms in a continuous length, being measured in the same way as the ball and bead chain. This chain is used extensively for holding bath, basin and sink plugs, and for many types of suspension in connection with light fittings, mirrors, etc. The machines illustrated have given years of excellent service and will shortly be replaced with new machines of improved design which are



Several different sizes of ball or bead chain can be made in these machines which form it in continuous lengths.



Chandelier chain emerges in a continuous length from these chain-making machines which have given many years of valuable service.



Barrel plating of products remains an important phase of Hipkiss-Kershaw production.

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For the small shop on jobbing work . . . for larger plants on production — Rysteel, All-Steel Pan Brakes have the structural and design rigidity to produce highly accurate, sharp folds and, once set, will continue to produce exactly identical folds to specification.

FEATURES

- *Rigid, rolled steel construction combined with light weight.*
- *Fully adjustable steel bending beam.*
- *Fingers forged from special steel, fully adjustable and removable.*
- *Front and back gauges both fully adjustable.*

Models—Style 1003: 4 ft. x 16 gg.; Style 1007: 6 ft. x 16 gg.; Style 1015: 8 ft. x 18 gg.; ★ 8 ft. x 14 gg.-m.s.p.

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QLD.: BOURKE & RADFORD, 129 Adelaide Street, Brisbane. B 3070.

S.A.: MAX CHILTON, Baptist Building, Flinders Street, Adelaide. Cent. 3880.

W.A.: S. Y. GARNSWORTHY, 69 St. George's Terrace, Perth. BA 3999.

N.Z.: G. P. SAGE LIMITED, 16 Wyndham Street, Auckland. Phone 19-400-1518.

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Sole distributors for
Australia and New Zealand—

Welded Products Limited

94-96 O'Riordan Street
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at present being constructed by H.K. and associate engineers.

The plating of manufactured lines is a feature of this company's production which has always received careful attention and was prominent in the expansion programme. Barrel plating remains an important branch of this phase of manufacture, but the show-piece of the factory is the newly-installed plant for bright nickel finishing which we illustrate.

This unit has all the equipment necessary for cleaning, plating and finishing articles, and eliminates the operation of polishing after plating. The plant is electrically operated, and control clocks switch heaters and motors on and off at pre-determined times.

"The finish given by this unit," said Mr. Miller, "supersedes that of orthodox still plating." It stands as evidence, moreover, of the efforts made by this company to improve its products and give to the trade the best of Australian manufacture at all times.

During the war the company had to concentrate on the production of ball chain, jack chain, chandelier chain, eyelets, rings, grommets, washers, wire forms and clips for defence use, and when England's production of articles of this nature was cut down owing to factories being blitzed, Hipkiss, Kershaw (Aust.) Pty. Ltd. had to supply certain lines to England, and at the same time supply British and American navies based on Australia.

Production lessons learned during that grim time have not been forgotten; it is not possible to judge the extent to which they influenced the expansion plans which have been put into effect at this factory so successfully.

Well housed, well equipped and geared to greater production, the company is not wasting much time looking backward.

Employees work on a liberal bonus allocation; for their benefit a generous superannuation scheme was recently introduced.

With the improvement in production, packaging of the company's products has been made more attractive, and distribution has been streamlined and geared to other phases of the company's development.

Hipkiss, Kershaw (Aust.) Pty. Ltd. have come a long way in their twenty years—and with the present vigorous management the company can face the future, and



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Marys—Mechanical Engineering.

S.E.C. Plating Co., 4 White
Street, Lilyfield—Electroplating.

Malvern Manufacturing Co., 34
Parramatta Road, Stanmore—
Mechanical Engineering.

Exact Instruments Mfg. Co., 59
Darghan Street, Glebe—Instru-
ments.

Kadex Co. Pty. Ltd., McManners
Street, McMahons Point—Venetian
Blinds.

Penetrate Co., 95 William Street,
Sydney—Leathergoods.

F. W. & W. J. King, 7 Myers
Street, Lakemba—Furniture.

Kingsgrove Metal Spinners Pty.
Ltd., 183 Kingsgrove Road, Kings-
grove—Metal Spinning.

V. I. Lehti, 77a Millett Street,
Hurstville—Furniture.

Lillenthal Pty. Ltd., cnr. Short
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Mantrad Manufacturing Pty.
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L. Mayer, Rawson Chambers, 491
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Mitchell and Marsh, 11 Franklin
Street, Glebe—Welding.

G. J. Moses, 186 Clarence
Street, Sydney—Clothing.

R. J. Moulang & Co., Building
199, H. E. Section, St. Marys—
Agricultural Implements.

V. M. O'Brien, 8 Denison Street,
Parramatta—Ladies' Clothing.

Paramount Brushware Pty. Ltd.,
79 Commonwealth Street, Sydney—
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Pawley Engineering, 1a Iris
Street, Paddington—Metal Toys.
Bright Nu Plating, 43a Beacons-
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PENFOLDS' BOILER HOUSE WILL BE SHOW- PLACE.

Several notable plant developments, the most spectacular of which will make the boiler house a showplace in gleaming cream bricks and oatmeal tiles, are taking shape at the great Magill (S.A.) winery of Penfolds Wines Pty. Ltd. They include:

The provision of an open brandy column instead of a pot still rectifying column. This is to give extra brandy production.

Installation of a Whitemill continuous still, with a capacity of 600 gallons an hour, to step up spirit production for increased fortification.

In the vintage cellar the removal of old conveyor belts and substitution of steel conveyor troughs. Every pump will have an individual motor with reduction gear on the drives.

Brick and tile work for the boiler house was designed by Mr. Jeffrey Penfold Hyland. The boiler house alterations include all latest features in burner equipment. There will be two boilers, both feeding into the one head, and all steam pipes will be carried away from this head in a nicely co-ordinated arrangement in which colours to identify the destination of the pipes will be a feature of the final paintwork.

T. J. Bromley & Tregoning Ltd., of Hurtle Square, Adelaide, are carrying out the steel conveyor trough work. The boiler house job is in the hands of Peacock and White, of Melbourne, who have opened a branch in Adelaide.

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Drums illustrated range from 5 gal. to 20 gal. capacity, for contents weighing up to 2 cwt.



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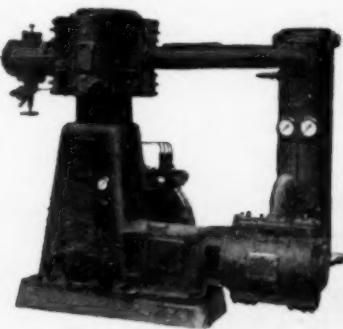
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These Machines are made in a number of sizes to give capacities ranging from 460 to 1,910 cubic feet per minute and larger, and for pressures up to 100 lbs. per square inch.

Drives are by direct connected Electric Motor in all sizes, also by belt from Motor or suitable Engine in the medium sizes.



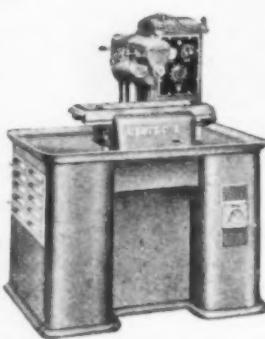
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PRODUCTION MILLING MACHINE

This is a unique Milling Machine embodying many new features. It is essentially a machine made for the mass production of small components. The machine works either completely automatically or in automatic repeating cycles. It is an ideal machine for the mass production of small links and forms. THE MAIN DRIVE is by direct current motor, fed and controlled electronically from a 3-phase alternating current supply. THE TABLE FEED is hydraulic, giving an infinitely variable range.



S. B. COX, A.G.E. CHAIRMAN, PASSES ON.

As announced in "The Australasian Manufacturer" of the 10th March, Mr. S. B. Cox, chairman of Australian General Electric Proprietary Limited, died suddenly at hospital on February 25, 1951.

Mr. Cox, who was 68, was born at West Bromwich, England, came to Australia originally to join the Brush Electrical Engineering Co. in 1903 and in 1907 joined the staff of Lohmann & Co. Ltd., Sydney, as manager of the Electrical and Engineering Department. In 1909 he transferred to the Australian General Electric Co. Sydney office. In 1914, Mr. Cox was on a business trip overseas and on the outbreak of war he returned to Australia and enlisted in the Australian Engineers, with which corps he served in France, returning to Australia in October, 1919, with the rank of major, having been mentioned in despatches for his war service.

After a short period in Sydney office he spent some eight or nine months with A.G.E. agents in Western Australia, Chas. Atkins Ltd. (now Atkins (W.A.) Ltd.), and in 1921 went to Hobart as representative with A.G.E. Tasmanian agents, Messrs. Oliver & Oliver. He returned to Melbourne office in 1924 and after about a year there opened the South Australian branch, where he remained for a period of five years. Returning to Sydney in 1930, he took over the position of General Sales Manager.

In 1930, an amalgamation took place of the interests in Australia of Metropolitan-Vickers Australia Pty. Ltd., Ferguson Pailin Ltd., The Edison Swan Electric Co. Ltd. and Australian General Electric Co. Ltd., and Mr. Cox became a director of the new organisation—subsequently known as Australian General Electric Proprietary Ltd.—and in 1933 became director in charge of sales. During the last war, Mr. Cox commanded the 28th Battalion V.D.C. with the rank of Lt.-Colonel. In 1947, Mr. Cox was appointed deputy chairman of the Board of Directors, and, on Mr. F. H. Clapp's retirement in December, 1948, Mr. Cox became chairman.

Apart from his business interests, Mr. Cox took an active interest in many varied spheres. He was president of the Imperial Service Club for the years 1948-49 and 1949-50, vice-chairman of the Board of Governors of the Corps of Commissioners, served on the Election Committee of the Royal Sydney Yacht Squadron and was an associate member of the Institution of Engineers, Australia.

His passing will be mourned by his many friends inside and outside Australian General Electric, whose sympathy is extended to his widow and son in their loss. That loss is shared by A.G.E. directors and staff, bereft of a distinguished leader.

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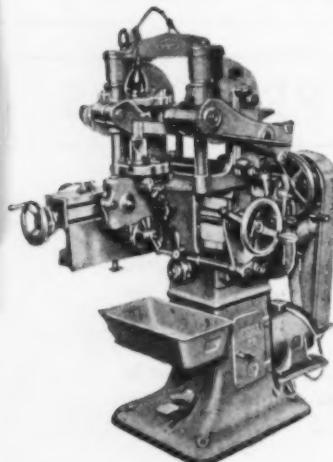
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A punch or profiled part shaped on the Essex-32 is cheaper and superior in finish. A simple, inexpensive tool is used on the machine for shaping straight or taper finishes from the solid, with or without foot plates. The first and only setting-up of the machine gives such a high degree of accuracy that, with only few exceptions, punches can be completely finished on the machine. Model 32 is simple, accurate and highly efficient in workshop operation.



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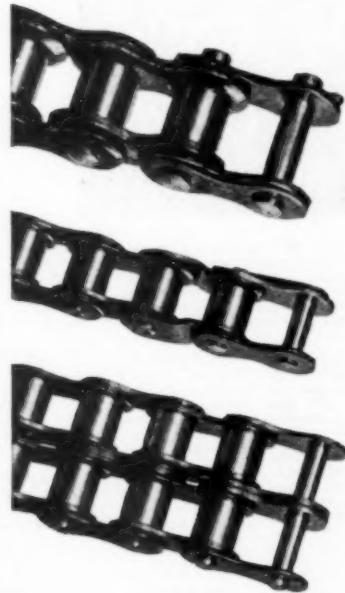
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INQUIRIES FOR PLANT MATERIAL AND AGENCIES

"THE AUSTRALASIAN MANUFACTURER'S" INQUIRY DEPARTMENT

This Inquiry Service is for the use of readers of "The Australasian Manufacturer" who wish to trace suppliers of Plant, Equipment and Materials, and for particulars of agencies offered. Address your inquiry to the Inquiry Department, and give the fullest possible particulars to enable us to put you in touch with the best sources of supply. **INCLUDE A STAMPED SELF-ADDRESSED ENVELOPE WITH YOUR INQUIRY.** It is essential that telephone inquiries be confirmed by letter. No charge is made for Inquiry Services, but normal advertising rates will be charged if agencies are sought by manufacturers' representatives or if goods are offered for sale. For the benefit of new subscribers, inquiries will be published in two or more consecutive issues.

SPECIAL NEW INQUIRIES.

WHEN REPLYING to an Inquiry, please quote the Reference Number and send your reply to the Inquiry Department, "The Australasian Manufacturer," Box 1887, G.P.O., Sydney. **INCLUDE A PLAIN, STAMPED ENVELOPE** so that we can forward your reply to the Inquirer.

DESIGN DRAFTSMAN (A.S.T.C.): The inquirer is available for professional duties in Sydney. Write to Ref. 8414, c/o "The Australasian Manufacturer."

MECHANICAL PRESS WANTED: A firm in South Australia is endeavouring to locate a new or second-hand Mechanical Press, capacity 200 to 250 tons; stroke, 9 in. minimum; table, 30 in. x 30 in., approximately. Write Ref. 8412, c/o "The Australasian Manufacturer."

ALUMINIUM ALLOY SHEETS FOR SALE: Sydney firm has for sale, approximately 4,000 lbs. of Aluminium Alloy Sheets, 22 SWG, various sizes, 3 ft. wide, 4 ft. to 8 ft. long. Write to Ref. 8413, c/o "The Australasian Manufacturer."

FOR SALE:—Two (2) Filter Presses, Plate and Frame Style, 24 in. square, 18-leaves, with Pump. Write to Ref. 8577, c/o "The Australasian Manufacturer."

METHYL AND ETHYL CELLULOSE: Manufacturers of these lines in Australia, are requested to write to Ref. 8406, c/o "The Australasian Manufacturer."

PLASTIC MATERIAL—LOOSE SEAT COVERS: The Agency handling "Somweave" plastic material used in the manufacture of loose seat covers for cars, is requested to write to Ref. 8407, c/o "The Australasian Manufacturer."

FOR SALE: SMALL MANUFACTURING BUSINESS.—The above business manufactures one line only and has been in operation five years. Sales over this period have been consistently good. It would be particularly suitable for an organisation who manufacture tools and who wish to extend their range of products.

Several machines are special-purpose machines, available only in the U.K. and the U.S.A. The price is reasonable, and depending on the stock should not exceed £3,000. Full particulars from Ref. 8411, c/o "The Australasian Manufacturer."

CAPACITY AVAILABLE: Sydney manufacturing Company with first-class press room, has capacity for work. Write to Ref. 8410, c/o "The Australasian Manufacturer."

MANUFACTURE OF NARCOTIC DRUGS AND PHARMACEUTICALS: An industrial chemist who claims considerable overseas experience in the manufacture of narcotic drugs, with a team of associated chemists and stocks of half processed alkaloids, seeks partnership or other mutually satisfactory arrangement with an existing Australian laboratory or pharmaceutical factory to establish an extraction and refining plant for narcotic drug and other pharmaceutical production. If interested write to Ref. 8408, c/o "The Australasian Manufacturer."

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from 1/8 in. to 1 1/2 in. dia. bar
CAPACITY AVAILABLE
Also Milling and Turning
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BALL-POINT PEN FLUID: Brisbane inquirer wants to obtain supplies of fluid used in ball-point pens, and one or more machines for re-filling such pens. Write to Ref. 8409, c/o "The Australasian Manufacturer."

POLYSTYRENE: Australian makers of this material, interested in export, are requested to write to Ref. 8404, c/o "The Australasian Manufacturer."

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4 tons 22 gauge, Tinned, \$45 per ton.
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Fasteners
AND FITTINGS FOR ALL TRADES
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ALBERTON I... SOUTH AUSTRALIA

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— **AGENCY AVAILABLE:** Victorian concern desires to appoint Agents for the distribution in N.S.W. of Tungsten Carbide Drills for building and allied trades. Write to Ref. 8405, c/o "The Australasian Manufacturer."

SUPPLIES OF BURNT LIME: Manufacturer requires regular small quantities of Lime (hydrated or slaked lime powder), burnt, or alternatively regular small quantities of burnt Lime powder. Write to Ref. 8398, c/o "The Australasian Manufacturer."

ELECTRO - MAGNETIC AND ELECTRO - STATIC SEPARATORS: Manufacturer desires to contact suppliers of Electro-Magnetic Separators and also Electro-Static Separators for the treatment of Beach Sands containing Ilmenite, Zircon, and Rutile. Write to Ref. 8396, c/o "The Australasian Manufacturer."

MILD STEEL BAR WANTED: Tasmanian engineering organisation urgently requires 2 1/2 in. square mild steel bar, short ends or lengths. Enquirer is cutting bar into pieces 1 1/2 in. long. Write to Ref. 8397, c/o "The Australasian Manufacturer."

BLANKING PRESS AND SHEET METAL MACHINE WANTED: Sydney firm wants to buy a large double crank blanking press, also any large sheet metal machines. Write to Ref. 8398, c/o "The Australasian Manufacturer."

TARIFF BOARD INQUIRIES.

The following is a list of subjects at present under reference to the Tariff Board, in respect of which public inquiries will be arranged at a future date. It will assist the Board in making its arrangements if it knows—
(a) The names of parties proposing to tender evidence at the inquiries.

(b) Particulars of requests that will be made and the exact nature of the goods to be covered by such requests, and
(c) A very brief and broad outline of the nature of evidence to be tendered.

All parties who advise the Board of their interest in any of the subjects listed will receive notification of the arrangements for public inquiries when these are made.

As it is proposed to distribute a circular giving particulars of intended requests, the information submitted should be as complete and concise as possible—particularly in the matter of description. For the same reason replies should be forwarded as early as possible.

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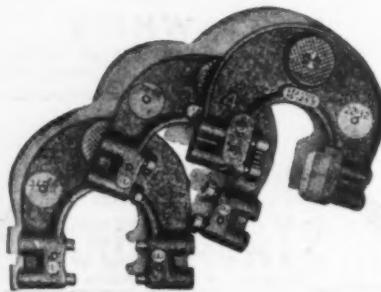
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Ancillary Equipment Used in the Textile Industry:

What rates of duty should be imposed on ancillary equipment used in the textile industry, namely—

Wool Comb Circles,
Falters,
Temple Rings for looms, and
Tenter Gills.

Religious Cards:

What rates of duty should be imposed on cards of a religious nature which, upon importation into the Commonwealth, are classifiable under Tariff Item 410(A).

Plug Gauges, Ring Gauges, and Adjustable Caliper Thread Gauges:

(a) Whether plug gauges, ring gauges, and adjustable caliper thread gauges should be removed from the provisions of entry under Tariff Item 449(A)(1).

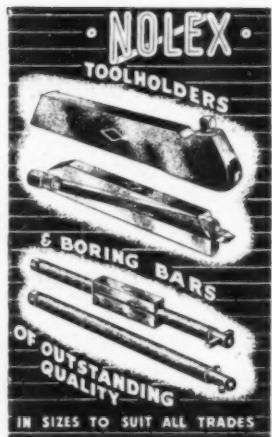
(b) What rates of duty should be imposed on plug gauges, ring gauges, and adjustable caliper thread gauges, if such be removed from the provisions of entry under Tariff Item 449(A)(1).

Machinery—Sliding Scale Duties:

What rates of duty should be imposed on Ironing Machines, Washing Machines and Woodworking Machines at present admitted under Tariff Items 176(E)(2), 176(E)(3) and 176(M), respectively.

Microscopes and Microscope Parts:

What rates of duty should be imposed on Microscopes and parts of Microscopes classifiable under Tariff Item 317.



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In the attachment to Tariff Board Circular 51/4, the following matter, referred to the Board by the Minister for Trade and Customs, was listed:

Strychnine and Strychnine Salts:
What is the maximum quantity
of

(a) Strychnine and

(b) Strychnine Salts

that should be contained in any individual container to permit, for Tariff purposes, of such goods being classified as packed for retail sale.

Readers are notified that the Board has been advised that requests as under for alteration in existing duties will be submitted at a public inquiry to be held by the Board in connection with this matter:

(1) By Burroughs Wellcome and Co. (Aust.) Ltd., Sydney—

That Tariff Item 281(U)(2) apply to any container of 4 oz. or less.

(2) By the Australian Association of British Manufacturers—

That only strychnine and strychnine salts imported in 1 oz. or smaller containers be regarded as packed for retail sale.

What rates of duty should be imposed on chain pulley blocks imported into the Commonwealth of Australia.

Manufacturers are notified that the Board has been advised that requests as under for alteration in existing duties will be submitted at the public inquiry to be held by the Board in connection with this matter:

(1) By Anchor Engineering Co. Pty. Ltd., Richmond, Victoria:



★ MACHINE ENGRAVING ★ ELECTROPLATING
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PORCELAIN ENAMELLERS

That Manually Operated Chain Pulley Blocks of the differential, worm geared and similar types be made dutiable at rates of

British	Other
Preferential Countries.	
Tariff.	
Ad val.	30% 50%

(2) By the Australian Association of British Manufacturers: That Chain Pulley Blocks imported from the United Kingdom remain duty free, or, alternatively, that any duty imposed shall comply with the provisions of Article 10 of the Ottawa Agreement.

Rubber Chemicals:
What rates of duty should be imposed on—

Phenol B—Naphthylamine
Mercaptobenzthiazole

Mercaptobenzthiazole di Sulphide imported into the Commonwealth of Australia.

Readers are notified that the Board has been advised that requests as under for alteration in existing duties will be submitted at the public inquiry to be held by the Board in connection with this matter:

(1) By Imperial Chemical Industries of Australia and New Zealand Ltd., Melbourne: That the chemicals mentioned in the Minister's reference be made dutiable at rates found justified after inquiry by the Tariff Board.

(2) By the Australian Association of British Manufacturers: That the chemicals under reference imported from the United Kingdom remain free under Tariff Item 281(L)(1), or, alternatively, that any duty imposed shall comply with the provisions of Article 10 of the Ottawa Agreement.

Catches for Ladies' Handbags and Wallets:

What rates of duty should be imposed on catches for ladies' handbags and wallets, imported into the Commonwealth of Australia.

The Board has also been advised that requests as under for alteration in existing duties will be submitted at the public inquiry to be held by the Board in connection with this matter:

(1) By F. R. Swinbourne Pty. Ltd., Melbourne: That the existing rates of duty on the goods under reference be retained.

(2) By Sydney Instrument Co. Pty. Ltd., Sydney: That the goods

(Turn to page 45.)

"Wilcolator"

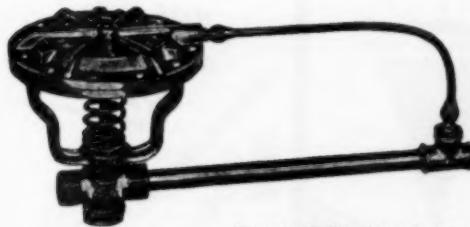
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- Approved by water supply authorities in Brisbane, Sydney, Melbourne and Hobart.



Wilcolator 780-C/in. Water Pressure Reducing Valve.

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THE AUSTRALASIAN MANUFACTURER
[Page 44, March 24, 1951.]

A FERRO ALLIED SERVICE TO THE AUSTRALIAN CERAMIC INDUSTRY

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will be available for consultation with the Australian Ceramic Industry as from March 1, 1951, for an indefinite period. Whilst Mr. Henderson has a wide experience in the Ceramic Industry generally, he is particularly well qualified in problems associated with brick manufacture, including tunnel kilns, equipment design and plant layout for both the dry press and wet extrusion processes.

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S.A.: NEVILLE COLLINS LTD., 154 North Ter., Adelaide. 'Phone: C 3722.

(Continued from page 43.)
under reference be made dutiable
at rates of duty of

British Preferential Countries.	Other Tariff.	Ad val.	27½%	33½%
(3) By Metallum (Aust.) Pty. Ltd., Sydney: That the goods under reference be made dutiable at the rate of 35% ad valorem, under the British Preferential Tariff.				

(4) By Carr Fastener Co. of Australia Ltd., Melbourne: That snap fasteners and turn-buttons be separated from catches and placed under a separate Tariff Item. Tariff Board Note: Only goods coming within the terms of the Minister's reference will be dealt with.)

Fish Oils:

What rates of duty should be imposed on fish oils at present charged with duty under Tariff Items 228(A)(2), 229(I), 229(J), 230(L), 281(L) and 449(A)(2).

The term "fish oils" is not to be interpreted to include whale oil and seal oil.

Readers are also notified that the Board has been advised that requests as under for alteration in existing duties will be submitted at the public inquiry to be held by the Board in connection with this matter:

(1) By Australian Vitamin Oils Pty. Ltd., Melbourne: The imposition of a duty of 6d. per million International Units of Vitamin "A" Oil, either in its natural state or in synthetic form.

(2) By Australian Packers Corporation Pty. Ltd., Melbourne, and Oslo Marine Products (Aust.), Melbourne: (a) Duty rates of 6d. per million units and 10% prime on all imported fish liver oils with Vitamin "A" content 200 to 3,000,000 International (or U.S.P. XIV.) Units of Vitamin "A" per gramme. (b) Duty rates of 9d. and 10% prime on all imported Synthetic Vitamin "A" products of the above Vitamin "A" content.

It is of course, to be understood that conditions may change between now and the date of the holding of the inquiry into this matter and that the above requests may be amended or new requests submitted.

Further information will be published at a later date setting out the places, dates and times for the holding of the public inquiries when these have been arranged.

LABORATORY TESTING OF ENGINES

No manufacturing organisation can be considered complete until it has the facilities for testing its own products under consumer condition. With this object in view, Repco has now completed the installation of a modern engine-testing laboratory. As an important unit of the Repco Research Laboratories, this latest addition will enable research engineers to submit engine parts to exhaustive tests under road conditions.

It would seem obvious that if engine parts can be made to accurate standards of materials and

WHEN IT'S WELDING—AUSTRALIA'S BASIC INDUSTRIES LOOK TO LINCOLN

A LINCOLN ARC WELDED JOB

6,750-gallon capacity brewery tanks

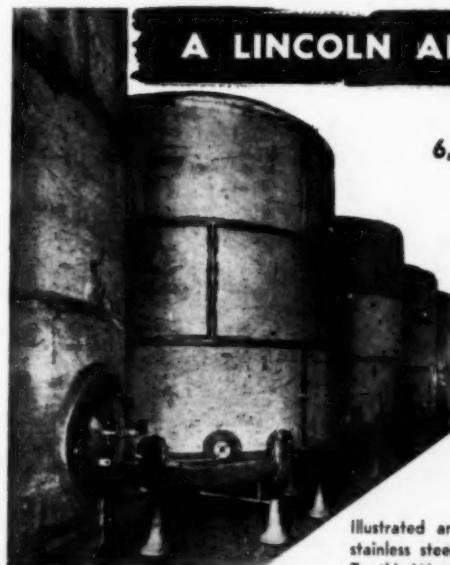
BUILT BY

E. M. BALDWIN & SONS
CASTLE HILL, N.S.W.

for Tooth's Waverley Brewery

THE ELECTRODES USED:
Stainweld

THE WELDING MACHINES:
Lincoln "Shield Arc" D.C.



Illustrated are a few of the many 6,750-gallon capacity stainless steel brewery tanks at present being installed at Tooth's Waverley Brewery, Sydney. The tanks, constructed of $\frac{1}{2}$ " plate, are 14' in height, 10' 7" in diameter, and weigh 23 tons each.

The manufacture of these vessels, in accordance with the provisions of the Boiler Code No. CBI and CBI0, requires a high standard in the quality of welding. Lincoln Stainweld electrodes, produced under controlled conditions from materials of the highest quality, are selected to meet joint requirements in fidelity of analysis, freedom from defects and excellent physical properties.

Top left—Five of a battery of 24 stainless steel tanks installed in extensions to Waverley Brewery. Capacity of each tank is 6,750 gallons.

At left—Part of the welding sequence. There are 265 feet of welded joints in each tank.

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W.A.: Carlyle & Co. Ltd., 915 Hay St., Perth, and 397 Hannan St., Kalgoorlie (for all products); also Malloch Bros. Ltd., 52-54 William St., Perth (for generators only).
N.S.W.: Grinders and Buffers—Paul Witzig & Co. Pty. Ltd., 55 York St., Sydney; Motors and Generators—Direct.

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Telexograms and cables: "COASTLION" SYDNEY



measurements, the need for further testing of such parts would be superfluous. However, this is not the case, as in the engine component parts are subject to variations of mechanical loads and temperatures which influence their performance. With the new facilities those variations in performance may readily be checked and observed whilst the engine is running as it would when on the road.

To do this it is necessary to have some means by which the engine may be made to perform a given task and at the same time measure the effective power of the engine whilst performing this task. This is accomplished by coupling the engine to a dynamometer which can be controlled in such a way to cause the engine to perform as it would pulling the car up hill or on the flat, fast or slow, with or without passengers. In other words, the engine can be made to work under any conditions desired and at the same time an accurate measurement of its performance can be taken.

Operators who control the tests can observe the engine and recording apparatus in comfort. One test unit is the latest electronic type of engine dynamometer capable of making tests of up to 300 brake horsepower at speeds of up to 3,000 revolutions per minute. This represents the very latest in engine testing equipment and upon which the slightest variation in engine performance may be detected and measured. Another test cell is a similar unit of the hydraulic type capable of absorbing up to 225 brake horsepower at slightly lesser speeds. The operator conducting a test has every facility at his disposal to control the engine, impose any conditions on its work and simultaneously note the results.

Inside the engine-room is an entire absence of the clutter surrounding engines when mounted for testing. Engine and dynamometer cooling systems are self-contained with all the accompanying pumps and piping under floor levels. The whole installation has been designed for easy access to all equipment and the fast and speedy removal and replacing of engines for test.

Not only will an installation such as this enable Repco to prove the quality and performance of the Company's products under actual working conditions, but the readily available facilities for testing new ideas and designs will promote developmental work which will keep the name Repco in the forefront of other available products.

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PARAFFIN WAX.**

Of all the amazing range of products derived from petroleum, possibly one of the most remarkable is paraffin wax—colorless, tasteless, odorless and harmless paraffin wax, which is used to wrap, coat or impregnate a host of common articles.

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taken for granted, is very interesting. The earliest known production of paraffin wax in America took place some 85 years ago, when a bulging canvas bag containing crude oil from which some of the lighter portions had been boiled away was left in a butcher's icebox. As the oil slowly drained through the canvas, it left behind a deposit of paraffin wax which had congealed in the low temperature.

Originally used in candles, it has since become an essential part of a unique variety of materials, from milk containers and electrical equipment to chewing gum.

Candles still require some 30,000 tons of paraffin every year in the U.S., but this is only 10 per cent. of wax requirements. About 75 per cent., or 250,000 tons, is used to coat paper or cardboard.

The modern history of paraffin might well be said to begin with the invention of waxed paper. The inventor's name is not recorded, but, as the story goes, he was an employee of a candleworks in New York City, in the 1890's. Often, on his way home, he stopped at a market and carried away a fish wrapped in paper. But long before he reached his home in New Jersey the wrapping would have ceased to confine the odour and moisture of its contents. Finally, he abated the nuisance by having the fish wrapped in his own paper, which he first dipped in molten candle wax.

When the fishmonger realised the advantages of a waxed wrapping, he inquired how he could secure some for his regular trade . . . a demand for a new product had been created.

From that beginning the waxed paper business has grown until its annual output in the U.S. requires 123,000 tons of paraffin coating. In

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ELECTROPLATING "CASSEL" Brand CYANIDES: WETTING and BRIGHTENING AGENTS.

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IMPERIAL CHEMICAL INDUSTRIES OF AUSTRALIA AND NEW ZEALAND LIMITED
SYDNEY BRISBANE

Agents: Elder, Smith & Co., Adelaide and Perth. Chemical & Textile Agencies Pty. Ltd., Hobart & Launceston.



C 9-4

strips one foot wide, this paper would circle the earth 500 times. Nearly half of it is used in the U.S.A. to wrap paper.

A still more recent development is the paper milk carton, which has muffled the milk bottle's rattle from coast to coast in the U.S.A. The amount of paraffin used on milk containers has tripled there since 1941.

Paraffin also goes into many drugs, chemicals and textiles. It coats electrical goods, is an ingredient of cosmetics and polishes, rubber, asphalt compounds, chewing gum and crayons. It lines

barrels and kegs, is sprayed on fruit to keep it fresh, and lubricates skis.

To-day its uses are ever-increasing, and Vacuum Oil Company affiliates are manufacturing experimental waxes as well as regular commercial grades, to put them through series of process tests in the laboratories.

During its early history paraffin was a by-product of lubricating-oil manufacture. To-day, in America, the petroleum industry is making half a million tons of paraffin, not as an incident in a process, but to meet an established demand for an indispensable product.

NEWCASTLE'S NEW WOOL PROCESSING INDUSTRY.

The launching of the Newcastle Wool Processing Co. Ltd. is scheduled for an early date. The new undertaking is to engage in fellmongering and woolscooping for the Australian market and for export. Mr. J. J. Kelly, general manager of the Farmers and Graziers' Co-operative Grain Insurance and Agency Ltd., is to be chairman, other directors being Messrs. J. O'Riordan, W. L. Hill, and F. W. Hydes.

Hot Brass Pressing

"The Advantages of a Casting Combined With Good Surface Finish, Accuracy of Dimensions and Better Machinability"

During recent years, the need for reduction of machining costs and consequent saving in overheads, in order to meet world competition, has been increasingly brought home to the majority of manufacturing concerns in industry. By virtue of the fact that hot brass pressings or stampings combine the advantages of a casting together with good surface finish, accuracy of dimensions and better machinability, their scope and use have been rapidly widening.

The hot press pressing is made merely by squeezing a piece of hot brass into a given shape between a set of tools, but this process, although it may appear at first sight quite simple and, in fact, rather elementary, is by no means as easy to put into practice as might be imagined.

BAΣΙCALLY there are two types of press employed in its manufacture: first the friction screw press (Fig. 1) where the power is

the whole driven assembly sideways, either one driving wheel or the other is brought into contact with the periphery of the hori-

blow, has been carried out, through a series of levers, by the operator who has thus been required to perform heavy manual work in the near vicinity of considerable heat given off by the billet heating muffle furnace (on right of press in Fig. 1). More recently, however, with the introduction of air-operated production devices, the operator is merely required to operate a small hand switch, whereupon the press is made to perform one full cycle by compressed air, leaving the operator free to select the next billet.

The second type of press is known as the "crank" (Fig. 2) and is, in principle, similar to a normal small power press, although on a somewhat larger scale. The power-stroke, therefore, is provided by means of a crankshaft to which is coupled a connecting rod carrying the upper half of the tool on its lower end, working vertically in slides and normally operated by means of a foot pedal.

Both types are available in various sizes giving capacities of up

to a present-day maximum of 500 tons. Fig. 3 shows at work a 290-ton crank press while Fig. 2 illustrates a similar type of 100 tons capacity. It will be realized that considerable pressure is needed to force brass at red heat into a given shape, perhaps complex, and the size of press employed depends entirely upon the weight and nature of the component to be made. The smallest presses, giving a blow of approximately 10 tons, have a capacity for components weighing only a fraction of an ounce each, and the larger presses can be used to make components of something over 15-20 lb. in weight.

When making a solid stamping, the lower tool is firmly clamped to the bed of the press and the upper tool is brought into close contact with it in order to force the metal into the required shape. If, however, it is desired to make a component having a recess or core, the lower tool may be held in a ring attached to the bed of the press which prevents it from moving sideways, but is enabled to move

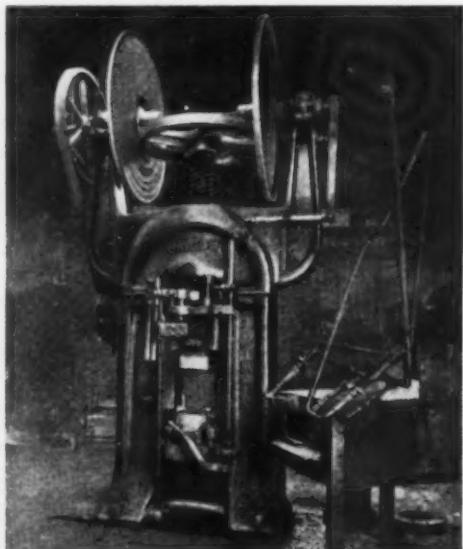


Fig. 1. Friction screw press for producing hot brass stampings.

obtained by moving two discs of steel (spinning vertically on the same shaft and driven by either line-shafting or a self-contained motor) laterally into contact with a horizontal disc which lies between them and which is itself coupled through a screwed shaft passing through the frame of the press to the top bolster which holds one half of the set of tools. The lower die is firmly clamped to the bed of the press. By moving

horizontal wheel, which is thus caused to spin clockwise or anti-clockwise and as this wheel is attached to the screwed shaft which passes through the frame of the press, the spin is converted to an upwards or downwards movement of the top die. In the past, the necessary force required to bring the driven wheels into contact with the screw wheel (lined round its edge with leather to supply grip) with sufficient strength to give the required



Fig. 2. "Crank" press—100 tons capacity.



Fig. 3. 290-ton vice action crankpress.

vertically a given distance, governed by the adjustment of a buffer upon which it rests, which cushions and restricts its travel by the use of either rubber under compression or compressed air. In this case the centre of the lower tool is bored and the tool is then placed over a firmly mounted peg which enters the bore. When the top tool, on the power-stroke, comes into contact with the lower tool, it pushes the lower tool downwards with it against the action of the buffer, thus causing the peg in effect to rise into the tool cavity,

the dies, not only extrudes the billet into the shape required, but also forms a bore. Fig. 3 shows a 200-ton vice-action press with the top coring peg in position. If required, two side pegs, one on either hand, and a bottom peg rising vertically, can be brought into operation at the same time. This technique shows many advantages in the case of, for instance, water fittings and, by coring holes in such items as elbows, T-pieces, cock bodies, etc., eliminates costly machining of the finished components and also reduces their weight prior to machining.

To withstand the high impact pressure involved, and also the abrasive action of flowing brass, it is necessary to use high-grade tool steel, generally a type containing about 10 per cent. tungsten. Hardening and tempering are of the utmost importance in this respect and the more so as tools often form a high proportion of the total cost of stampings made. Normally the tools are hardened to give a tensile strength of a figure in the vicinity of 95 tons/in.², but in certain instances lower or higher strengths are employed. Steels used are in the shape of either forged blanks or bar, the latter being cut off to the required length, but it is becoming increasingly apparent that the forged blank, although initially costing slightly more than a comparable sized piece of bar, is well worth the additional expense as the impression sunk into the tool is nearly always about its centre and any weakness in bar steel tends to occur at this point.

When designing a set of tools for a particular component, it is essential wherever possible to avoid sharp corners as these are very conducive to rapid tool wear and sometimes breakage. If the right steel is employed, the tool design is good and the hardening and tempering are carried out satisfactorily. The set of tools in normal usage should be capable, depending to a degree upon the complexity of the component stamped, of producing anything up to about 100,000 pressings. In practice, however, it is rarely feasible to strike an average tool-life as some tools, for one reason or another, may become useless after making only a few hundred components, while others may last almost indefinitely.

In order to keep the tools "on-set" during stamping, registers are provided which may take the form of either dowels or, preferably,



Fig. 4. Hot brass pressing showing crack or "shut."

forming a recess in the stamped component.

A further modification of the crank press is known as the "vice action." This set-up, says J. D. Hollingworth, in "Metal Industry", is employed for making components which require deep cores or bores and, with a normal layout as many as four coring holes may be stamped into the component simultaneously during the power-stroke, provided that these holes are required to be at right angles to each



Fig. 5. Internal view of gas governor body.

other. Using this method of manufacture, the two halves of the die, instead of moving in a vertical plane, operate in a horizontal direction on a vice principle and the component is formed by the action of pegs which enter the die cavity on the power-stroke. In other words, the crankshaft, instead of carrying the upper half of the set of tools, merely carries a coring peg, and this peg, upon entering



Fig. 6. External view of gas governor body.



Fig. 7. "Pre-Form" stamping from which gas governor body is made.

some type of positive alignment of the tools themselves. This can readily be accomplished by cutting back the steel round the impression on one tool in the form of a "D" or a square and having a corresponding shape standing proud on the other.

Before stamping takes place, the tools are pre-heated to their working temperature by means of a gas jet as, if left cold, the heat which would be transferred to them during stamping would cause distortion and subsequent cracking. The usual billet employed consists of a certain length of extruded rodding, both diameter and length being determined during the sample stage by trial and error, although calculation of the volume of the component to be made will give an initial indication. Quite often, however, it is discovered, particularly with a component of irregular shape, that something more is required in order to form the component without creating undue flash wastage. In such cases the rod billet may be pre-formed, after heating to about 750° C, by stamping it to the desired shape under a press, with flat plates instead of tools, or in certain cases the billet may be stamped into a primary set of tools known as "pre-forms."

Which of these procedures is adopted depends entirely upon the nature of the component to be made and is bound up with the metal flow which takes place dur-

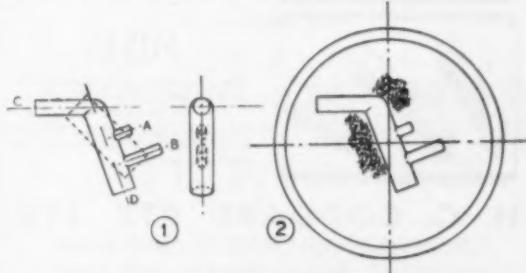


Fig. 8. Method of restricting flash on stamping.

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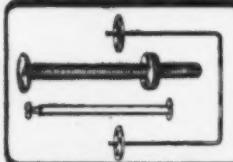


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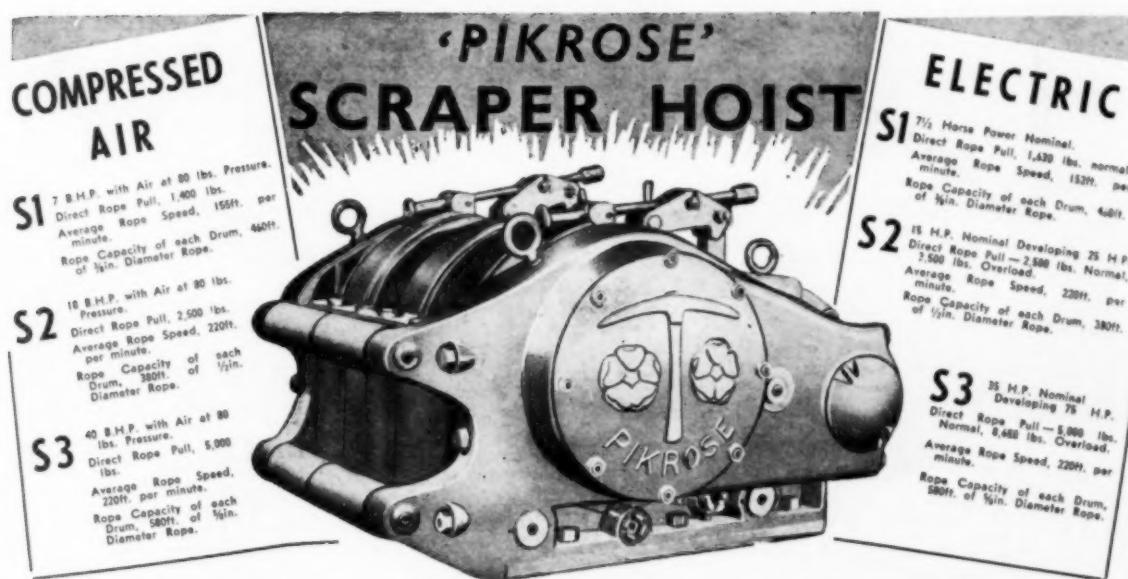
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rapid flow of metal, to flush the crack out into the flash, where it does no harm. Alternatively, the temperature of the tools can be raised with the same effect although, when the press is on a production run, the tools find their own heat level and any forced increase means extra cost by way of auxiliary gas-heating jets. The importance of temperature is well illustrated whilst endeavouring to obtain samples from a new set of tools when, after heating the tools thoroughly, "shuts" are observed in components stamped which very often "run out" and disappear when the job actually goes into production. In stampers parlance, it is necessary to "keep them on the run."

If the cracking in the component cannot be successfully removed by the above outlined method and the tool shape cannot be altered to facilitate flow, it then becomes necessary to think in terms of either a squashed billet or a set of pre-form tools, as already mentioned. The former is a method of taking the metal to its destination in easy stages, and the latter of making a component roughly to size which is then perfected, after further heating, in the finishing tools. Figs. 5 and 6 show a finished gas governor body stamping, while Fig. 7 shows the pre-form stamping from which it is made. It should be mentioned that for many components of a complex nature, one of the multiplicity of extruded sections available to-day, cut off to length and used in place of a round billet, will provide the answer in that they

act rather like a squashed billet by placing the metal nearer its destination before the final blow.

The use of extrusion is also bound up with the desirability, and indeed the necessity, of keeping flash down to the minimum possible in order to avoid all undue wastage. It must be remembered that the price per lb. of extruded section is more than that of rod, but it is, nevertheless, more economic under certain conditions to use section and thereby considerably reduce the flash. Imagine, for instance, a component shaped as in Fig. 8. If this component were to be made without lugs A and B it could be stamped from a billet which had previously been bent to the approximate angle required. Presuming, however, that the lugs were required and that the main arms C and D were fairly short, a straight billet could be laid across the tool at an angle, shown dotted, and by marking the faces of the tools, as illustrated, with criss-cross cuts a few thousandths of an inch deep, the component could be stamped. The purpose of the cuts would be to restrict the flow of metal outwards into the flash, thereby causing the required flush of metal at points C and D. On the other hand, if the bosses are to be made longer, this checking would not be sufficient in itself and if the size of the billet used is increased, either of two things may occur. First, the extra volume of metal may tend to cushion the blow during stamping, thus having the effect of thickening the flash and thereby causing the finished com-



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ponent to be oversize on that dimension, or, secondly, all metal over and above the correct volume of the component, if the blow is sufficient to prevent any increase in volume through thickened flash, must be wasted.

To overcome these difficulties it

may be decided to stamp an extrusion of roughly the same section as the component, and by paying careful attention to the size of the arms the metal wasted in stamping can be reduced to a minimum.

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tained by the operator purely by watching the colour of the billet. A bright cherry red (750-800° C) is a fair average stamping colour, although sometimes, depending upon the nature of the component to be made, a cooler billet may be used, although not below about 750° C. It must be borne in mind, however, that if the billet is too cool, severe additional stresses will be set up during the stamping process and may result not only in a poor-quality product, but also in decreased life of tools. Brass which is too hot suffers from a separation of the grain structure which results in a rather rough stamping, the surface appearing to be crystallized. Muffles, placed at the side of the press to facilitate the pro-

duction cycle, in most cases are of perfectly straightforward manufacture in that they have an opening at the back into which the cold billets are placed by a labourer and which are then raked forwards to the front of the muffle by the stamper, as required. It will be seen that the billets at the back of the muffle are subject to a certain amount of pre-heating, which enables them gradually to approach their correct stamping temperature as they are brought forward and a thorough "soaking" of this nature is essential to a good-quality stamping. Other types of muffle employ automatic feed and in certain instances may even be connected to the operation of the press, although, generally speaking,

production rate does not increase very considerably with the use of these semi-automatic devices. The operator selects the billet which is to be stamped next, grasps it with a pair of tongs and places it on top of, or into, the lower die cavity. The exact position in which the billet is placed has a large bearing upon the success of the stamping operation, and this is only determinable by experience.

A certain amount of lubrication is necessary to ensure a good and correct metal flow, the article points out, and not only the type of oil or grease to be used, but also the amount of it, and where it is placed, depends largely upon individual operators' experience. It is perfectly true to say that a stamp-

ing can be made or marred by the use which is made of lubricant and also by the type of lubricant employed, although for normal work a high-grade graphite grease will prove satisfactory. One drawback, however, is that this grease tends to make the surface of the stamping appear rather dirty.

The use of lubricant gives rise to numerous snags and difficulties. Imagine, for instance, a small-diameter flat plate being stamped to a given thickness. Upon the application of grease, the metal will flow more rapidly and then, as the grease is burnt off the tool, the flow becomes slower. This has the effect initially of making the stamping oversize in diameter and

(Turn to page 62.)

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Metals Old and "New" Iron and Steel Are Now Supplemented by Complex Alloys

In 1851 Great Britain was the foremost industrial country of the world and owed its position largely to the metallurgical inventions made in England during the preceding century. On them the Age of Steel was based—for the successful smelting of iron ores with coke allowed the large-scale production of pig-iron, the melting of steel in crucibles made the manufacture of precision tools a reality, and the puddling process enabled wrought iron to be produced readily.

These inventions were the foundations of British industry, but alongside them were flourishing trades in certain non-ferrous metals and alloys. Copper smelting was an old-established industry, Birmingham brass was the best known alloy in the world, Cornish tin had been famous for 2,000 years, and in 1839 Britain produced more lead than all the other European countries. But aluminium, nickel, magnesium, chromium and tungsten were then unknown. Industry operated in small units; even in the iron works—which were among the largest undertakings—the average number of employees was about 200.

ABOUT that time an epoch ended. The simplicity of the metal trades began to disappear under the impact of new inventions and of electric power available in large quantities at prices which industry could tolerate. Metals which hitherto had been only laboratory products were produced in commercial quantities. New alloys with useful and attractive properties emerged. The opening up of new countries yielded ores richer than those at home as well as ores of metals not found in Britain. Metallurgy became international, and the acquisition of new knowledge about metals was stimulated by the demand for superior armaments. Each achievement created a fresh demand; the production of new alloys was encouraged, and many new metals were asked for in large quantities. The size of individual manufacturing units grew apace, the use of mechanical aids was extended, bulk production arrived, and with it the demand for vast quantities of steel.

Though the annual production of pig-iron in Britain had reached 2,250,000 tons by 1850, the output of structural steel was small, and it became considerable only when a further British invention—by Bessemer allowed mild steel to be made in bulk directly from pig-iron. Bessemer's process was put into practical operation in 1859; it was followed quickly by the open-hearth process, and the world production of steel, which in 1850 was about 60,000 tons per annum, rose to 500,000 tons in 1870 and to 28 million tons in 1900. Now it is about 130 million tons annu-

ally, which includes Britain's contribution of about 17 million tons. The processes used to-day differ in no essential from those used 80 or 90 years ago, except that impure ores which then were quite unsuitable for steel production have been employable since 1878 as a consequence of the British invention of the "basic" process.

The small units previously engaged have been greatly expanded and, in each country, a few modern works produce most of the metal required. The kind of steel produced to-day differs little from that made last century and is admirable for most ordinary purposes—domestic, railways, shipbuilding, and civil structural engineering. For these uses it seems unlikely to be replaced in any foreseeable future; for other purposes it has been superseded completely by alloy steels. These alloy steels became possible only when some non-ferrous metals which had been un procurable in 1851 became available.

Many of these non-ferrous metals—tungsten, chromium, and nickel in particular—were provided during the latter half of the nineteenth century. By adding nickel and chromium, as was done in Britain about 1890, steels with strengths four times greater than those of the common steels were made. Stainless steel was invented in Sheffield in 1914 by introducing about 11 per cent. of chromium. Later it was developed by the addition of still more chromium and some nickel.

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(Turn to page 55.)

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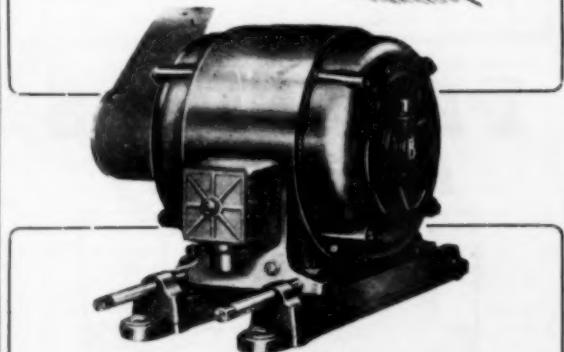
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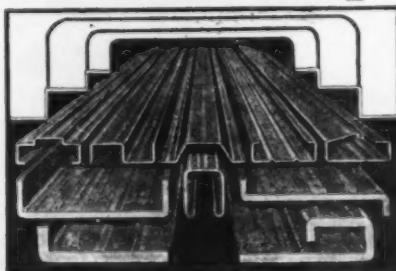
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(Continued from page 53.)

about 18 per cent of tungsten and some chromium were added to ordinary steel. "High-speed" steel, first shown at the 1900 Paris Exhibition, was the consequence. Magnet steels of superior characteristics have been made by alloying steel with proportions of cobalt, aluminium and nickel, while steels suitable for the high-temperature services demanded by gas turbines have resulted from the introduction of moderate quantities of nickel, chromium, molybdenum, and titanium. In 1890 manganese, a minor constituent of steel since the time of Bessemer, was added in larger proportions by Hadfield, who produced a steel which was highly resistant to wear and abrasion. Compared with that for the common steels the demand for these alloy steels is relatively small; but each of them calls for a special technique, appropriate equipment and all the virtues of applied specialisation. In their production Great Britain excels.

In the "Times Survey of the British Industries Fair," Dr. Leslie Aitchison reports that developments in non-ferrous metals have been far more numerous than those in iron and steel. With the latter the procedure has been to develop methods of bulk production, to improve techniques, and to obtain better properties from one basic metal. With the non-ferrous metals improved techniques and methods have been worked out for producing the several known metals, and some new alloys have also emerged from them; in addition, a number of metals previously un procurable have been isolated, smelted in considerable tonnages, and made available at commercial prices. The coming of plentiful electric power made possible the new industrial technique of high-temperature electrolysis of fused, metallic salts. This procedure, brought to a high standard of perfection during the second half of the nineteenth century, permitted the extraction of certain metals—aluminium being an outstanding example—from oxides which hitherto had resisted economic decomposition.

At the Paris Exhibition of 1855 a bar of aluminium was shown alongside the crown jewels of Napoleon III. After the successful application of electrolysis the price of this metal fell rapidly, but was still 20 shillings a pound in 1890; to-day it is about one shilling. In 1900 the annual world production was about 7,000 tons; in 1943 it was substantially greater than 2 million tons, an output second only to that of iron and steel and roughly equal to the combined production of all the other non-ferrous metals. As well as being used in a pure—or nearly pure—form in domestic appliances and hollowware, aluminium is the basis of many alloys, some possessing strengths much greater than those of ordinary steel—a metal three times as heavy. No other metal has been strengthened so much as aluminium—one of the outstanding metallurgical achievements of our time. Another metal obtained by

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the electrolytic method is magnesium, which was a curiosity in 1900, when the total world production was only 10 tons. By 1943 this had reached an annual rate of 270,000 tons, most of it unfortunately for consumable war materials.

Not all new metals were made by the electrolytic method, though in some cases the availability of electric energy in bulk was invaluable for attaining the high temperatures required for smelting. Among the more obviously important metals which have emerged industrially since 1851 are nickel, chromium and tungsten. The first became important originally because of its effect on the properties of steel. When plenty of nickel ore was discovered in Canada the raw material supply was assured, and the purification process worked out and established at Clydach, in South Wales, produced metal of very high purity. From this metal many valuable alloys have been compounded, among them stainless steels, cupro-nickel, which is used in condenser tubes, bullet envelopes and coinage, the material of resistance-heating units, and special alloys for high-temperature duty. Chromium, well known as a plating metal, is also an essential component of stainless steel, of high-temperature alloys, and of resistance materials. Tungsten was first used in an impure form as a constituent of high-speed and other tool steels. After it had been prepared in a pure state and made ductile it was widely used in incandescent lamps and in vacuum tubes of all kinds.

ISOLATING RARE METALS

A number of other "new" metals have emerged since 1851; in fact, all the metals known to exist in the world have now been isolated, the last—rhodium—as recently as 1925. Many of these new and relatively rare metals go unrecognised by the ordinary citizen, although he benefits constantly from their use. Wireless valves and the technical parts of radio embody many of them; others occur as minor components of common alloys; yet others have proved to be essential to the equipment for making such materials as nylon and artificial silk. Even gold, a rare metal though the oldest known, finds industrial applications of this kind to-day. Of the possible employment of uranium in industry it is hardly necessary to write.

It was stated earlier that metallurgy has become international. Learned societies and publications spread knowledge over the whole world, so that most industrial countries produce much the same metals and alloys, even though they do not achieve equal efficiency. Facilities for easy transport allow ores to be carried from their native sites to others where electric power, coal, or labour are available. Often, in order to save the cost of transporting earthy gangue, it is economical to smelt at the mine, but the crude metals are taken for purification elsewhere. It rarely pays to work an inferior ore deposit since, in peacetime, richer materials can be im-

(Turn to page 61.)

Industrial Films

Practical Guidance in a Subject that Interests Many Business Men But is Understood by Few

A successful industrialist knows one business thoroughly—his own. Knowing it, keeping abreast of it, is solid work for a lifetime. To say he could perform every operation and function within his factory would be patently untrue. If it were true, the achievement would rank as a tour de force. He would have the qualifications of a scientist, engineer, electrician, trained operative, truck driver, salesman, advertising manager, commercial artist, accountant, shorthand typist, welfare officer, medical officer and nurse, etc. He would probably also suffer from an inability to delegate power to his subordinates.

But every now and then, a new industry arises to force its attention upon the conduct of trading affairs. A new industry, either because it presents a challenge to the established order of commerce, or because it can broaden the channels of production and consumption, demands study and a degree of mastery. Such an industry is the moving film, gathering strength, momentum and influence over the last fifty years.

IF one were to comb carefully through the personnel on any industrial pay-roll it would be exceptional to find a single staff member with the barest knowledge of how a film is initiated, coated, produced, and distributed. Turn to your advertising agencies, and with few exceptions, their information and advice will be meagre and prejudiced equally by their ignorance of film production technique and the general absence of data on cinematic influence. To everybody's discomfort (including the film makers themselves) the usual method of testing a new product by subjecting it to scientific analysis is not valid in the case of film. For film is part art and part industry—the admixture defies standardisation tests, and further, insists that its very creation has but one common ingredient, that is, a varying percentage of originality.

Within these latitudes, says an article in "Scope", every industrial film project demands proficiency in the methods adopted to initiate it on a sound commercial footing. It is with this procedure that "Scope's" article is concerned.

An idea for a film has germinated within your mind. There it must lie in its pristine purity until such a time as you decide to confer with the representative of a film company. The choice of the film company requires careful consideration and should revolve

around their achievements and the creative members of their staff. Discussions with a film company should not proceed beyond the stage where you have outlined briefly the object of the film contemplated, before requesting to be shown a selection of the films they have produced of a similar character. Looking at these films is comparable to looking through a sample collection of patterns. Even if the materials are not available you can form a clear impression of their style of production, quality and consistency of design.

Either you discover a film whose execution convinces you of the company's ability to make the film you are contemplating or you look elsewhere. Most film companies of real substance have enough creative personnel to undertake the production of several films at the same time. It is, therefore, advisable to insist on receiving assurance that the same personnel who created the film you discovered most to your liking will be available to make your film. The key personnel of a film company are the script-writer, director, and cameraman.

It is now that the sponsor can proceed with full confidence to discuss with the film producer the idea he has been nursing. The first consideration is: Is film the right medium for projecting the idea? No producer, for the sake

one film contract, would risk his reputation and that of his company in sanctioning the production of a film on a subject which he did not honestly believe could be rendered in visual terms. An idea in itself may be excellent. The producer, however, will judge its merits in relation to the task and to the audience which the film (its visual translation) is expected to impress. The discussion in most cases leads to modifications, additions, and subtractions—both

parties making concessions until they share a joint conception. At this point the producer brings the script-writer and director into the picture, acquaints them with the outline of the film and listens to their observations and suggestions. It is wise to ask to meet them in person. An interview confirms or disabuses an experienced employer of the background, experience, and potential of the people to whom the making of his film is to be entrusted.

What does this Convey to you?



Is yours the archaic, expensive system of one man to one load in goods handling? Have you considered the enormous advantages in using gravity, earth's cheapest power, to solve your problems?

GRAVITY ROLLER CONVEYOR, inexpensive, durable, time-saving, is the engineer's answer to many a big bottle-neck in the production lines.

Big and small installations receive the same degree of attention, and we shall be most pleased to advise you, and furnish full particulars.

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Arkon FLOW INDICATOR

IS THE COOLING WATER CIRCULATING?
IS THE BEARER GETTING THE OIL?

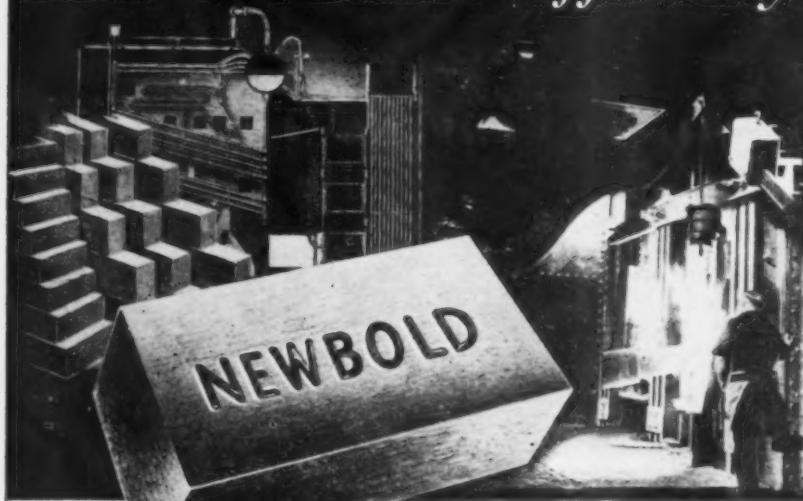


The oil or water spins a chromium-plated ring under a glass dome. If the flow stops, the ring stops spinning and warns you that something has gone wrong.

IMMEDIATE DELIVERY

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Moreover, making this early personal contact enables one to assess temperament and personality—two very important factors in securing the smooth co-operation of one's staff on the factory site and avoiding an unplanned cessation of production. On some films the script-writer is also the director, and the producer is sometimes a director/script-writer. Whether they are separate individuals or performing dual roles, the presence of the creative brains during the formative and flexible stage of idea-development is vital to the fullest exploitation of their talents and an insurance against those preventable hitches in film production which can make films unnecessarily costly.

To the script-writer, who now sits down to write a treatment of the film, discussion is as vital to inspiration as the film's content. Before he can put pen to paper, his mind must be clear as to his audience and the message. Technical details like the cycle of production or the operation of a machine he gleans from the technical members of the firm's staff, who are put at his disposal for so long as he remains at the factory acquainting himself with the pattern and system of production. The treatment, he writes, is a literary piece of work, in which all the points to be included in the film are given shape and length and stress and imagery, so that the sponsor, on reading it, receives a visual impression of the story, and is left in a position to check its technical accuracy and to alter the emphasis of picture or statement at will. The preparation and writing of a treatment can be likened to laying the foundation and erecting the outer walls of a building. The remainder of the structure, decorative or plain, will have a short life, unless the framework is sound.

A treatment does not commit a would-be sponsor to carry on with the making of the film. The payment for having commissioned a treatment should be regarded as an item of expense approximating to a consultant's fee. You pay for it, whether you decide to make further use of it or not.

Assuming you are satisfied with the treatment, the film company is now in a position to work out the probable cost of the film. Not until now should the question be posed: "What will the film cost me?" To ask, as many keen business men do, what a film will cost, at a first meeting, is tantamount to asking an architect for a price quotation on a new factory building before he has been given the chance to draw the plan and consider the cost of the building materials involved.

When the "rough" cost of the film has been agreed the script-writer prepares a shooting script based on the treatment. A shooting script is the blue print for the complete film. It is difficult for the layman to read; he should ignore the camera directions and concentrate on checking that the shape and message of the film has been preserved.

(Turn to page 60.)

Safe Working!
with
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and machine tools

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**PIPE LINE
IDENTIFICATION
PAINT**

No mistakes are possible when your service lines are
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ARMSTRONG**
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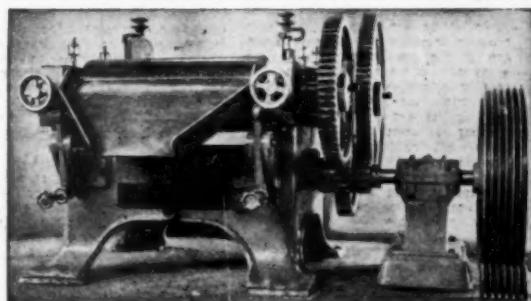
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Machinery designed for
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or supplied to customers'
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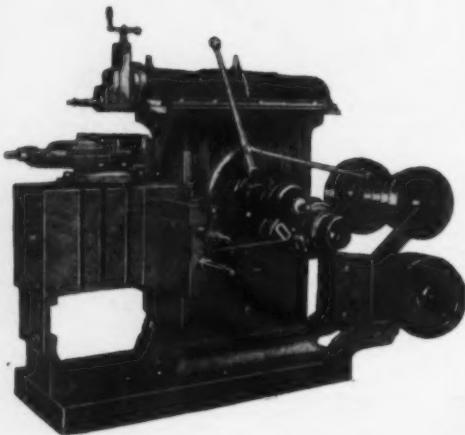
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"PREMO"

High-Speed Crank-Shaping Machine 18" Stroke



- **MAIN FRAME** is an integral box section casting strongly cross ribbed. The vertical slide is machined in accurate alignment with the ram slide. The length of the ram slide is 26in. fitted with square guides and an adjusting strip ensures maximum support in all positions of the ram.
- **THE DRIVE** is by means of a four-step cone pulley and semi-helical machine-cut gears, obviating any tool chatter on the work.
- **THE TOOL HEAD** is mounted on a graduated base and can be locked in any position by a quick action cam. The Clapper Tool Box can be swivelled for adjusting tool clearance independently of the vertical feed.
- **THE BASE PLATE** is a separate casting carrying a slide bracket on a machined face at the front end. This supports the table under heavy loads.
- **THE RAM** is an extra strong casting with a wide-bearing surface. It is actuated by a powerful link system, and the upper end of the driving link is opened to pass 2in. diameter shaft for cutting keyways.
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- **THE DRIVING MOTOR** is mounted on a neat swing frame carrying the four-step counter shaft pulley with convenient hand lever and spring tensioning device.

GOODALL & CO. PTY. LTD.

301 KENT STREET, SYDNEY, N.S.W.

Phone: BX 1611

(Continued from page 58.)

Before proceeding to draw up an imaginary budget for an imaginary film upon the shooting script, it would perhaps be useful to list those items, not common to all industrial films, which may add considerably to the cost.

First, there is the choice between a film in monochrome (black and white) and a film in colour—which will cost between 50 per cent. and 200 per cent. more. Colour is becoming increasingly popular but its performance (in some colour systems) sometimes lacks consistency. Naturally in the case of fabrics, fashion goods, food, farming and open air topics where appeal is enhanced by the intimacy and warmth of colour, a film in colour is a valuable stimulus in direct selling and public relations.

But is colour a justifiable choice for films of factory interiors? The argument for using it is that every object transmits some colour to the retina of the human eye. The argument against its automatic use, apart from cost and performance, stems from the necessity of sitting in a darkened hall to see films. Darkness distorts the familiar impression of an object's colour through intensification, as we all had occasion to discover during the years of black-out. Furthermore, audiences are now accustomed to seeing workshops and processes in black and white. For the time being, the subject matter should be the deciding factor.

Another item of expense is the engagement of professional artists. Whether they should be employed on a film will depend on how much the film relies upon acting to convey its message to the audience. It is advisable to be guided by the producer in casting the artists for each role. He will submit names and photographs for your inspection; he will arrange for you to meet the artists in the flesh; and he will make screen tests. But if there is a divergence of opinion about the suitability of an artist for a role it is wise to remember that the trained eye of the producer can visualise a glamorous young lady in the role of a canteen worker (let us say) with less likelihood of committing the grave error that miscasting is, than can the sponsor.

Above all, do not insist against the opinion of the producer in casting an employee for more than a minor part in a film in the belief that money can be saved. With very few exceptions, amateur talent requires more rehearsal and shooting time before the director gets the desired performance; and time is a major expense in filming.

No two film companies will present their budgets in the same way. Some will include a contingency at 10 per cent. or more to cover overtime and some of the hitching which are prevalent in film-making. Where a film has much exterior location work the risk of overstepping the time schedule is greater and the percentage of contingency will be higher. Some companies allow for

this in calculating the working hours of the technicians.

The budget also covers the unseen item—wastage; the sponsor is confronted with an item of four to ten times more film stock than ever appears in the finished film. This "wastage" is inevitable in making any kind of film and to attempt thrift would be a false economy. The final version of a film in its assembly demands a range of shots from different angles, in addition to those duplicated several times in order to counteract human error and reach near-perfection.

Finally, sponsors should insist on being presented with a hard-and-fast contract based on the script, leaving the film company to bear the risk of unfavourable weather. This is particularly important if the film calls for shooting under the open sky. Unless one takes this safeguard, a team of technicians might be an unbudgeted liability for a couple of weeks while awaiting suitable weather conditions.

An estimate for the two-minute advertising film, compared with the 20-minute film, which is ten times its length, may seem disproportionately high. But, just as the price of a film treatment diminishes in writing the story to cover a second and third reel, so too are some of the initial expenses, like building a set (stage scenery) not less expensive because it will only be required for two days filming instead of a lengthier "shooting" schedule. Moreover, the two-minute advertising film can be exhibited in the best of cinemas, so that its quality must be as theatrically good as a big feature film. In passing judgment on the cost of a two-minute advertising film, the only legitimate consideration is viewer potential—in the same way as Press advertising is based on readership.

It is, incidentally, a common fallacy to regard these two media as rivals. In fact, each is the complement of the other. To organise a national or regional advertising campaign without taking into account the number of cinema seats sold weekly is to go into battle with an exposed flank. Yet the relationship between the cinema, the local dealer, the local Press, and the National Press has been barely perceived by manufacturers.

It is a recognised English practice that the sponsor pays for a film in three equal instalments. The first instalment falls due on the start of production; the second, at the half-way stage; the third on completion and delivery of the first show copy.

To raise employee-interest in the project, a brief synopsis of the film might well be posted on the notice-board or printed in the house organ and a small prize offered for the best suggestion for a title to the film. Enthusiasm is important because the start of a production is preceded by a detailed memorandum setting out the time-table and location where personnel, machines, material, extra light tappings, painted backgrounds, will be required.

EXPORTERS — IMPORTERS
GUTWIRTH & SONS
PTY. LTD.
298 Collins Street
MELBOURNE, VICTORIA
Telephone: Cent. 4618

When the whole film has been shot, the sponsor is invited to look at the "rough-cut" of the film and to hear the commentary read. The "rough-cut" is a tentative assembly of the scenes to conform to the script and without opticals. This first viewing will run far longer than the final edited version. Armed with a copy of the commentary, the sponsor can alter the emphasis of one scene or the other and "vet" the commentary in consultation with the producer. Alternatively, he can request the omission of a scene. The film is still flexible.

Details of background music and credit titles follow next. Music is either disc recording or specially composed. In some films music is used indiscriminately and all the time. There is no point in this. The selection and use of music should be governed by the contents of the film; its purpose may be introductory, emotional, dramatic, etc., but it should be purposeful and not a mere distraction. For music has to share the sound-track on the film with the commentator's voice and, on occasions, with special sound effects. What may sound like harmonious blending within the acoustically-treated walls of a cinema can become, under the non-theatrical conditions of the village hall or works canteen, a reverberative cacophony.

After the commentary has been recorded on one sound-track, and the music on another, there is a "dubbing" session, when both are "married" on a single sound-track. Again, the sponsor is invited to view. This is his last opportunity to make slight alterations. The visual film, edited and assembled, and the sound-track are projected in synchronisation on to the screen through a double-headed projector.

All this work is carried out on a print taken from the original negative and by the time these last final adjustments have been made the print has collected dirt and scratches. It has, however, one more function to perform. The untouched negative is now cut and assembled to match the print. Before fresh prints are taken from the negative it is expertly graded. A test print is taken, followed by further grading, and at last the show copy emerges. From the rough-cut stage to the final show copy, there have been at least nine intricate and delicate processes requiring specialised skill and imagination.

What expectations of life has a well-made film? On the average one should be able to count on five years. Films which have for their theme either the fundamental problems of industry or a stable process of manufacture can anticipate longer circulation.



MITCHELL OF KEIGHLEY, 6 in. to 12½ in. Centre Gap Bed, Self-acting Sliding, Surfacing, and Screw Cutting LATHES have for nearly 60 years possessed a high reputation as first-class general purpose, medium-priced machines.

MITCHELL OF KEIGHLEY LATHES have been, and are being shipped to practically every country on the map. An indication that the straightforward design, substantial construction and high standard of manufacture make the MITCHELL product thoroughly dependable and trouble free.

Sole Australian Representative

**Brown & Dureau
Limited**

ALL STATES

ENGINEERING REPRESENTATIVE:
K. L. DISTRIBUTORS PTY. LTD., HOBART

Metals Old and "New"

(Continued from page 58.)

Another way of ensuring a long life to a film is to make it an indispensable part of the training of salesmen within a given field. In other words, an educational film (if good) has the stamp of a long life.

Whether the purpose of a film in the case of consumer products is direct or indirect selling, the length of its service is in the main determined by the outmoding and replacement of the products themselves. One compensation for this is the possibility of the film's intensive exploitation and its early replacement by a new film on the merits of the latest product.

ported readily. For a variety of these reasons the old non-ferrous trades of Britain have changed; only small quantities of the basic metals are smelted here, the deficiencies being made good by Rhodesian copper, by Canadian nickel, copper, lead and zinc, and by Australian lead and zinc. Much of the crude metal is purified in Britain, while the manufacture of alloys of all metals goes on in undiminished quantities.

This last century has transformed the metallurgical scene. A hundred years ago the pattern of the metal trades was simple and a few metals only—mainly wrought iron, cast iron, copper and brass—had to suffice for every require-

ment. The new non-ferrous metals have changed all this; apart from making possible the special steels, they provide more suitable materials for a great many purposes. High electrical and thermal conductivity, varied electrical resistance, freedom from corrosion, lightness, reflectivity, aesthetic attraction, refractoriness—all these are among the properties which justify the development of these metals and alloys. Hundreds are available, and more will come, for the possibilities of alloy making are not exhausted.

Around a core of big productive units making the basic metals (pig-iron, steel, aluminium) on which civilisation depends for its bare existence there has grown a host of special trades producing the less common metals and alloys. From them derive almost all the graces and comforts of modern civilised life as well as many of the essential means of defending it.

SPECIAL NOTICE TO READERS
To receive prompt attention, address all inquiries to Box 1887, G.P.O., Sydney.



Merchants everywhere can make the same declaration.

Federal's production figures prove they are right—every seven weeks Federal produces as many switches and switch fuses as in any entire pre-war year.

FEDERAL

Made by:
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Sales Organisation:
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South Aust. — E. Bown, Adelaide.
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Tasmania — R. H. Littler, Launceston.
New Zealand — Carrel & Carrel, Auckland.

Contact your Electrical Merchant for Supplies

The NILSEN INDUSTRIAL GROUP

After Business Hours

(Continued from page 2)

of argument and counter-argument he lay silent, apparently oblivious to his lawyer's pleading on his behalf. The jury

brought in the verdict: "Not guilty." Whereupon the said Robert rose briskly from his stretcher and walked unaided from the court.

This reminds us of the story of the lawyer who assured his client he would get a verdict in his

favour—on the plea of insanity—if, in reply to all questions asked by the judge, the prosecuting counsel, and their ilk, he answered: "Tiddly-um-tum-tum. Tiddly-um-tum-tum." The case proceeded, the client meekly answering as instructed, until finally the judge roared: "Prisoner



WELDON HARDWARE



Manufactured by

W. H. WELLS PTY. LTD.

127-138 Abbotsford St., Nth. Melb.

Interstate Representatives:
N.S.W.—Qld. & N.Z.: Eason R. Plett
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South Australia: Wm. C. Keany, 141
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tralia: Associated Distributors, 880
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"Just like pre-war days.

Federal ironclad switches and switchfuses fill the shelves. No need for a Merchant to stock substitutes nowadays.

I can give contractors one or a dozen 320 A.I.'s or even a couple of 1003 K.B.'s.

The firm receives regular deliveries of all Federal Ironclads".

at the bar, are you guilty or not guilty?" To which he got the reply: "Tiddly-um-tum-tum." "Dismiss the prisoner," declared the judge, "this court gives no verdict against the insane." The lawyer came to him, rubbing his hands with glee, and his eyes glowing in anticipation of the proportions of his fee. "Well," he said, "I told you I would get you off. You must admit I've made a fine job of it. How soon can I expect my fee?" "Tiddly-um-tum-tum," he blithely rejoined, giving a like answer to the heated protestations, the ardent pleadings, and the vehement threats of the all-too-smart lawyer.

It takes nearly 250 tons of rock—blasted from deep within the earth's crust and processed through many and varied stages of sorting—to produce just one carat of fine gem-quality diamonds.

Husband: One who lays down the law to his wife, and then accepts all her amendments.

Hot Brass Pressing

(Continued from page 52)

under in thickness and of gradually increasing the thickness during subsequent blows. Thus, once again, the skill and technique of the operator are of prime importance if wastage is to be avoided.

Tools are, of course, designed with a view to avoiding any undercuts which might make it impossible to remove the stamped components, but if a certain amount of lubricant is not employed it may be found that the component will stick in the die cavity and cause considerable difficulty in ejection. Incidentally, ejection can either be automatic with the ejector pins rising under the flash or on to the component itself or a thin piece of steel, the end of the operator's tongs, for instance, can be used under the flash as a lever. The latter method must be carefully watched as it is very easy to bend



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TEMPERATURES
WITH
"DOBROS"
DIAL
THERMOMETERS

MADE IN AUSTRALIA
BY

Dobbie Bros. Thermometers Pty. Ltd.
80 LITTLE LONSDALE STREET, MELBOURNE

or distort stamped components which are still hot. If bending during ejection cannot be avoided, as in the case of a component with a very thin section, the stampings are straightened by planishing, usually in the cold state, before despatch. Sometimes it is arranged, by means of judicious tapers in tool design, for the component to be carried upwards by the top tool after the power-stroke and to be either ejected by means of a moving sleeve at the back of the die or to be knocked off by hand.

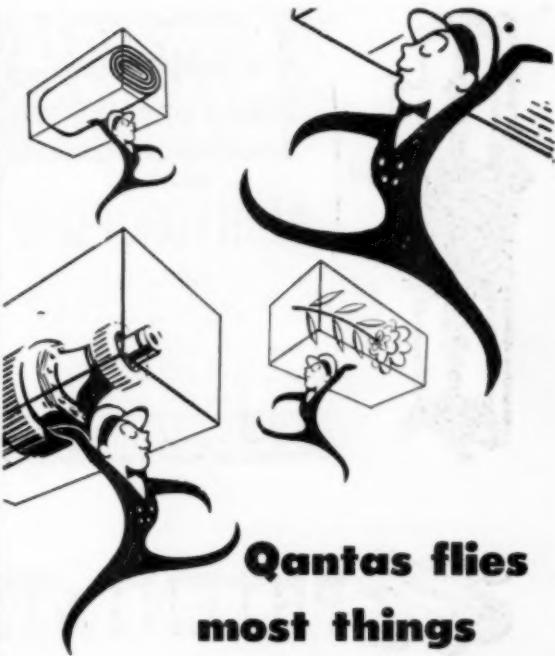
After stamping, the components are collected in work trays and taken either to hand- or power-operated presses for the removal of the surplus metal; the clipping bed, normally made from common hardening steel, taking the form of the section of the component through the flash line and the punch contacting the stamping and pushing it through the bed, thereby removing the flash. Here again procedure varies somewhat, as if the component is liable to roll or twist when clipping takes place it is necessary for the punch to be made to fit exactly all the plan view area of the component, whereas other stampings can be clipped quite satisfactorily by means of a punch that contacts the component at one or two points only.

After clipping has been carried out, the stampings, in order to be despatched in as attractive a manner as possible, are dipped to remove surface dirt and to impart a bright, clean-looking finish. Dip-

ping techniques vary considerably, but a typical procedure would consist of immersion in, first, a vat containing hot caustic soda and from there, after a few seconds, to a mixture of commercial sulphuric and weak aquaforthis in which the stampings would be left for about five minutes. Then would follow a cold-water sluice and a two-second dip in pure aquaforthis, which again would be sluiced off in cold running water. Finally, to bring out the colour, a dip in boiling water, after which the components would be sawdust dried.

I.C.I.A.N.Z.'s "FABREX"
PRODUCTS.

In order to cope with the ever-increasing demand for "Fabrex" leathercloths, the I.C.I.A.N.Z. factory at Deer Park, Victoria, is being extended vastly. As a matter of fact, £500,000 is being spent on extensions which, when completed, will make the factory the largest of its kind in the Southern Hemisphere. In this enlarged plant, the new cloth "Vynex" is to be manufactured. This synthetic challenger of leather is a wartime discovery. In its production, polyvinyl chloride is used as a coating medium over a high-grade cotton base. The new product is attractive in appearance, is durable, pliable, and provides a neat, economical trimming. The majority of Australian motor body builders have been using "Vynex" with complete satisfaction for some time. The shortage of leather supplies, plus the increase in the output of Australian motor bodies, necessitated a marked increase in output. Hence the large-scale extensions at Deer Park.



Qantas flies
most things
most places

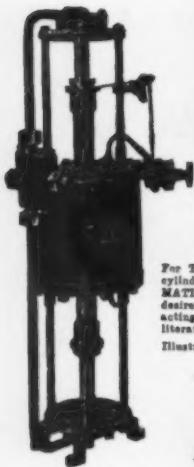
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PATENT & TRADE MARK NEWS

**PATENT SPECIFICATIONS
 ACCEPTED**

**AUTOMATIC CUT-OFF FOR
 ELECTRIC WATER HEATING APPARATUS**

137,772.—J. R. F. Terrell, Vic. Arranged within a liquid receptacle is a substantially vertical float with a substantially vertical operating member connected to the base of the float and extending slidably through a liquid-tight seal in the wall of the receptacle to actuate a switch or other control means.

BURNER FOR FUEL OIL
 137,773.—L. W. Levey, Vic.

A burner of the type has a substantially annular burner well for fuel oil, which is so shaped in section that the surface area of the fuel oil therein varies with the level of the oil in the well, whilst being substantially uniform at all parts of the well for all levels of fuel therein.

RECEPTACLE FOR NEWS-PAPERS

137,774.—W. G. Brooks, Vic. A container has an opening for easy insertion provided with means for gripping a folded newspaper therein and is adapted to be unsymmetrically pivoted about a horizontal axis for gravitational angular movement responsive to the insertion of the newspaper from an unstable position with the opening uppermost to a stable position with the opening lowermost to cover or exclude the newspaper. Releasable means such as a bowed spring clip with central section forcibly engages a flattened portion of a fixed shaft on which the container is pivotally mounted and which disengages from the shaft on insertion of a folded newspaper.

ELECTRIC WATER HEATERS.
 137,775.—Dux Heaters Pty. Ltd., N.S.W.

To prevent water tracking directly to outside the heater, a base having a water inlet and outlet supports a frame mounted between insulators secured to the bosses. A heating chamber is

secured to the horizontal portion of the frame by clamping bars and screwed bolts. The water inlets and outlets of the heating chamber are secured to the base inlet and outlet pipes by flexible hose-like couplings and porcelain tubes.

AUTOMATIC BAG LOADER.

137,776.—J. T. Kershaw, Vic. To lessen the initial shock of the load, a loader comprises: a lifting frame adapted to be pivotally mounted on a truck; a bag holder mounted at the outer end of the lifting frame; a gear means for pivotally raising the lifting frame so that the bag will be elevated and emptied; and spring or other means for returning the lifting frame to its initial position, characterized in that the means for raising the lifting frame include a resilient member attached to one end to the outer end portion of the frame and its opposite end to a drive member so that when the drive member is operated the resilient member will be tensioned and cause the outer end of the lifting frame to be raised. The grain bag is dis-

charged owing to the momentum induced in it and sudden stoppages of the frame whence the linear speed of the resilient member increases progressively with the rotation of the driving member.

PNEUMATIC DOOR ENGINE.
 137,777.—Westinghouse Brake (Asia) Pty. Ltd., N.S.W.

To ensure air-tight seating, and smart get-away of the piston at commencement of its outstroke, a door engine of the kind comprising a stepped cylinder, a differential piston, a coupling device connecting means for constant air pressure devices and control valve mechanism for admitting or exhausting air under pressure, is characterized by cushioning means for the piston, comprising a valve holder, skirt axially slidably within the piston, stops to limit movement of the valve holder relative to piston, a loading spring, a valve closure member slidably within the spigot, stops to limit movement of closure

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member, and a loading spring for
closure member. A nipple has a
bleed passage and an air inlet and
exhaust opening, about which the
closure member may seat.

PNEUMATIC POWER OPERATED GUILLOTINE.

137,728.—Victorian and Interstate
Airways Ltd., Vic.

To provide a cutting machine
wherein the operating pressure
may be increased or decreased or
the amount of movement of a
member altered, a pneumatic
power operated guillotine having a
blade mounted slidably relative to
and between a fixed member and
a head member has spring means
for returning the blade to initial
position and is characterized in
that the means for moving the
blade comprise a flexible collapsible
member, located between
the blade and the head member,
the collapsible member being con-
nected to a pressurized fluid sup-
ply and mounted in such manner
that when the fluid under pressure
is admitted to the tubes they will
extend and thereby cause the
blade to travel towards the fixed
member. The pressurized fluid is

admitted to the flexible members
through a valve which may be
operated by pedal to admit fluid
to the flexible member or to per-
mit the fluid in the flexible
member to escape to an outlet.

WOOL HOLDER FOR HAND KNITTING.

137,780.—Moulded Products
(Asia) Ltd., Vic.

A wool holder for use in hand
knitting includes a flat portion on
which rotatable wheels carrying
indicating characters and wheel
gripping means, are fitted.

POST HOLE BORING APPARATUS.

137,792.—E. Halliday, N.Z.

Apparatus which permits align-
ment within the width of the
vehicle comprises the combination
with a self-propelled vehicle of a
boring tool suspended by counter-
balance means and operated by a
transmission drive from the
vehicle.

PRICE TAG OR LIKE ARTICLE.

137,794.—W. J. Flimister, Vic.

A sheet metal element, the nar-
row neck portion of which is de-
formable to secure the tag to an
article of merchandise, has a por-
tion coated with a pigment to en-
able indicia to be inscribed there-
on by a pointed instrument.

THE WAXING OF FLOORS.

137,796.—D. W. Potts, N.S.W.

An appliance comprises an open
bottom pan, a wax pervious sheet,
a thrust plate and means such as
a spring for pressing the thrust
plate within the pan on the way.
A handle is pivotally mounted on
the pan and device for varying
the loading effect of the spring,
the fitting of a mop head below
pan, and the assembly of three
pans for use with a power-
driven polishing machine are in-
cluded.

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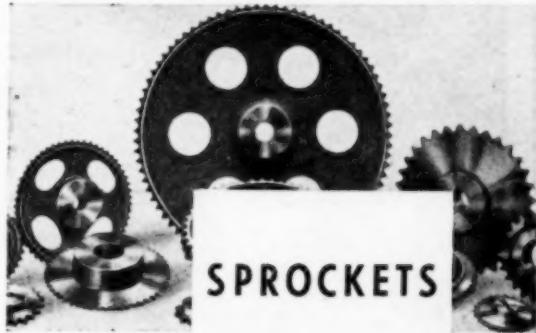
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LIGHTING FITTINGS.
138,828.—The General Electric Co.
Ltd.

An optical system for use in a lighting fitting of the kind in which the effective minimum dimension of the light source is a substantial fraction of the distance between the source and the optical system, including a single transparent member formed into a plurality of like reflecting prisms arranged side by side in a band, the prisms being so designed and disposed that the prisms at the two extremities of the band (for example, in operation, the upper and lower extremities) are arranged to direct light substantially in a given direction from the corresponding extremities (upper and lower) respectively of the source and the intermediate prisms are arranged to direct

light into said direction from corresponding intermediate parts of the source.

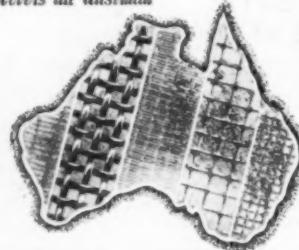
MANUFACTURING BARBED WIRE.

137,800.—A.R.C. Engineering Co. Pty. Ltd., Vic.

Barbed wire is continuously produced by intermittently traversing a main strand kinked, intermittently traversing at least one barb forming strand kinked, engaging kinks together, on engagement severing the barb forming strand to form projecting barb lengths on opposite sides of the main strand, and twisting the barb lengths about the main strand to form barbs.

A machine for carrying out the above method is described and claimed.

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POLE RING.

138,829.—Heenan & Froude Ltd.

An imbricated pole structure for eddy current dynamometers, brakes, clutches or the like of the type referred to comprising poles having oppositely directed imbricated teeth extending from the pole rings across the coil and having pole faces at predetermined constant distances from the inductor throughout the pole face each ring being formed with notches between its teeth, the valleys of the notches increasing in size as they approach the opposite tooth with tooth formed axially at its root portion in the ring by a series of radially symmetrical sectional figures the shorter sides of which are adjacent the inductor and with the toe portions beyond the ring formed by a series of radially

symmetrical sectional figures the longer sides of which are adjacent the inductor.

ENAMELLING RECTANGULAR WIRE.

138,826.—British Insulated Callender's Cables Ltd.

A die for use in coiling rectangular wire with enamel, comprising four elements, each forming one operative surface of the die aperture, and resiliently held together to maintain the operative surfaces in contact with the wire and to permit the elements to follow irregularity of the wire surface, each operative surface being formed with projecting ribs extending parallel with the die axis, in which each die element is a group of thin metal plates placed side by side in planes parallel with the die axis so that one edge of

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each plate forms part of the operative surface.

APPARATUS FOR APPLYING ADHESIVE STRIP TO CANS.
138,830.—Cow & Gate Ltd. and G. K. Charles.

An apparatus for applying adhesive strip to cans or other containers, provided with a rotary can-holder and a movable carrier therefor, the can-holder being rotated when moved by the carrier to bring a can held by it into contact with the strip, and past the severing device and the final pressure roller or other means for completing the pressure of the strip on the can, the can-holder after releasing the wrapped can being returned to its initial position ready to receive another can.

FILTER CIRCUIT.
138,831.—The General Electric Co. Ltd.

An electric low-pass or band-pass filter network having a bridging network connected between points thereon, the difference between the time delay along the filter network between the said points and that of the bridging network being substantially equal to the periodic time t of the damped oscillation generated at the output terminals of the network in response to a short pulse applied to the input terminals of the network, or to an integral multiple of t .

OZONIZING APPARATUS.
138,832.—Ozonair Ltd. and E. F. W. Cowell.

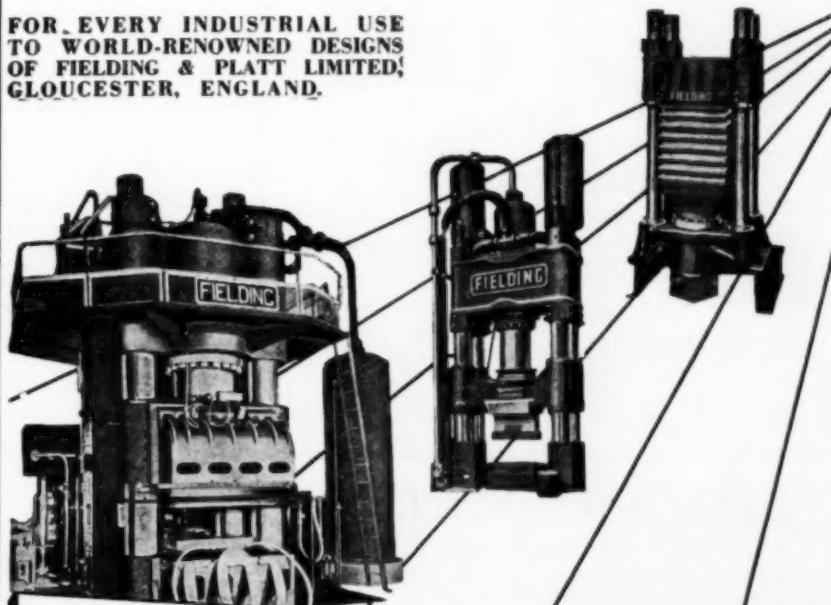
A unit for use in ozonizing apparatus, constituted by two sheets of wire gauze separated by a sheet of dielectric material and rolled to cylindrical form, the outer gauze being confined by one or more encircling bands, while the inner gauze has its ends headed inwardly and engaged by the oppositely directed, obliquely disposed peripheries of a pair of end plates provided with means for separating said plates in the axial direction, the wedging action of the obliquely disposed peripheries on the beads of the gauze, when said plates are moved away from one another, stressing the inner gauze in the axial and radial directions and establishing intimate contact between the whole of said gauze and the dielectric material.

ELECTROMAGNETIC COUPLING.
138,823.—Heenan and Froude Ltd.

An eddy current coupling comprising co-axial and relatively rotatable field and inductor members in which the field member contains means for establishing a field consisting of a co-axial annular series of alternating north and south poles of substantially equal strength flanked on one side by a co-axial annular series of alternating strong north poles and weak south poles and on the other side by a co-axial series of strong south poles and weak north poles and in which the inductor member is formed with conducting rings co-

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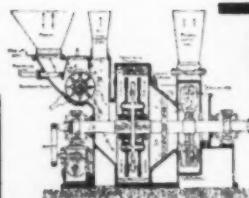
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therewith at least their
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99,007. "Anax." Dispensing
scales, counter and dielectric
scales, and balances.—Elliott's &
Australian Drug Pty. Ltd., 20
O'Connell Street, Sydney, New
South Wales.

99,293. "ElectroVision." Tele-
vision equipment.—Electrosound
Pty. Ltd., 422-424 Kent Street,
Sydney, New South Wales.

97,129. "Ronstir." Apparatus
composed of metal or in which
metal predominates, for attachment
to bottles, jars and like vessels
for dispensing beverages
therefrom.—Ronald Francis Brewster,
4 Stott Street, Croxton, Victoria.

99,013. "Beltone." Vacuum
tube hearing aids.—Beltone Hearing
Aid Company, 1450 West 19th
Street, Chicago 8, Illinois, U.S.A.

99,171. "Syrinjector." Surgical
instruments.—A. M. Bickford &
Sons Limited, 42 Currie Street,
Adelaide, South Australia.

99,104. "Grim Grip." A wood-
working appliance made principally
of ordinary metal.—Wilfrid
Russell Grimwade, 139 Orrong
Road, Toorak, Victoria.

99,143. "Electrobloc." Apparatus
for steam generating, heating,
lighting, cooking, refrigeration,
drying and ventilating.—J. W.
Woolley & Company Limited, Two
Gates, Tamworth, Staffordshire,
England.

99,227. "Metaflex." Packings
and jointings (in the nature of
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99,310. "Shademaster." Window
blind material consisting of a
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Nuplastex Rubber Company
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ricksburg, Sydney, New South
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99,083. "Rockfil." Solders body
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LA3414 LA1871

TERRA COTTA ROOFING TILES

The Standards Association of Australia has published a revision of its standard specification for Terra Cotta Roofing Tiles and its Code of Recommended Practice for the Fixing of Terra Cotta Roofing Tiles, A.S. Nos. A.13-1950, CA.5-1950 (bound together).

In the revised specification, shingle type tiles are dealt with in greater detail than in the earlier edition and provision is now made for side-locking single-lap types. The original test for water absorption has been replaced by a permeability test, which is felt to be a better measure of the fitness of the tile for roofing purposes.

The revised code includes an extensive group of definitions, many of them illustrated. Other additional features in the code include recommendations of rafter lengths to avoid cutting of tiles, precautions with low pitched or exposed roofs and treatment of hips and eaves.

Copies of the standards may be purchased from the Standards Association of Australia; price, 8/-.

FIBROUS PLASTER PRODUCTS

The Standards Association of Australia has published a Specification for Fibrous Plaster Products and a code of recommended practice for the Erection and Fixing of Fibrous Plaster Products, A.S. Nos. A.44-1950, CA.20-1950 (bound together).

The specification which replaces the war emergency standard No. (E) A.504-1942 lays down the minimum requirements for the manufacture of fibrous plaster products and gives appropriate tests for checking compliance with these requirements, and transitory relaxation permits the use of certain substitutes during the present shortage of sisal hemp fibre.

The code of practice allows for variations in practice in different States, particularly in the thicknesses of wall sheets. Such practices are set out in an appendix.

Copies of the standard may be purchased from the Standards Association of Australia; price, 3/-.

TENDERS FOR PATENTS

"IMPROVEMENTS IN OR RE-LATING TO COMPRESSORS."

Commonwealth Patent No. 122,818. The Patentees of this invention desire that it be adopted and brought into commercial use and manufacture in Australia, and invite inquiries to this end from persons and firms interested.

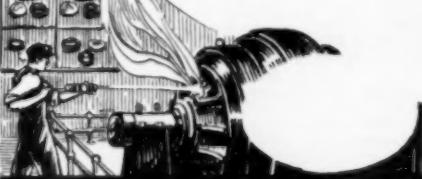
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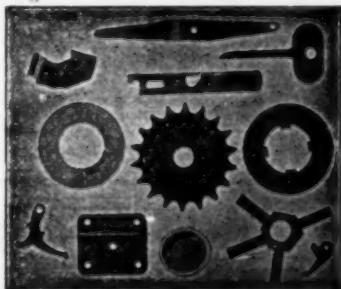
It should be carried on all motor conveyances—cars, trucks, buses, boats, etc.—and installed wherever electrical machinery is used. It is invaluable in home or factory.



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and the combining of its sales organisation with Thor's worldwide export division marks an expansion directed to give Independent Pneumatic Tool Company greater representation in the world market for pneumatic tools." Mr. Hurley stated in a press conference with World News Services in London. "We are taking every step possible to supplement the present production at Gateshead-on-Tyne with our own Thor models now in production in the United States, and for that reason are seeking at once a location for a larger works to get this increased production programme moving as quickly as possible."

THOR PURCHASES TOOL COMPANY IN ENGLAND.

Armstrong - Whitworth & Co., Pneumatic Tools Ltd., Gateshead-on-Tyne, England, in business for nearly a century, and one of the largest and most prominent British industries, has been purchased by the Independent Pneumatic Tool Co., Aurora, Illinois, U.S.A., manufacturers of THOR pneumatic tools, universal and high frequency electric tools, mining and contractors' tools. Mr. Neil C. Hurley, Jr., president of the Independent Pneumatic Tool Company, recently made the announcement. The purchase price has not been disclosed.

The Armstrong-Whitworth Company and its big manufacturing facilities with a force of 750 employees has now become an affiliate of Independent Pneumatic Tool Company Ltd., London, England, a subsidiary of the parent company in Aurora, Illinois, U.S.A., which also has subsidiaries and factory representatives in Toronto, Canada; Sao Paulo, Brazil; Benoni, South Africa; Mexico D.F., Mexico; Antwerp, Belgium.

Mr. Hurley announced that Robert G. Faverty, former manager of Thor branches in Chicago and Detroit, has arrived in Gateshead-on-Tyne to assume immediately the position of managing director in charge of the new Thor property.

Also in Gateshead-on-Tyne to lay out plans for an early expansion of the Armstrong-Whitworth pneumatic tool works are E. R. Wyler, Thor vice-president and director of exports, and James A. Perham, chief engineer at Thor's Aurora factory. Mr. Perham is also planning with Armstrong-Whitworth engineers certain Thor pneumatic tools to be put into production in England.

Mr. Hurley disclosed that he is inspecting a new site on which to erect a new and larger plant to handle the anticipated increase in production of the combined Armstrong-Whitworth and Thor pneumatic tool lines.

"Operation of the Armstrong-Whitworth manufacturing works

THREAT TO COTTON TEXTILE INDUSTRIES.

It was pointed out recently by Mr. A. H. Griffiths, President of the Associated Cotton Textile Manufacturers of Australia, that the acute shortage of raw cotton constitutes a serious threat to Australia's cotton textile industries. "Only source from which additional supplies of the right quality can be obtained," he said, "is the United States... Raw cotton is available from America to all buyers who can get the necessary dollars, but the Federal Government, despite frequent appeals, has given no indication whether a dollar grant will be made." Mr. Griffiths explained that failure to secure American cotton will mean that supplies will have to be obtained from Brazil and Pakistan, at cost approximately 50 per cent higher than American cotton.

"Not only is Indian and Brazilian cotton dearer and less suitable than cotton from America," he added, "but it is doubtful if those countries can supply sufficient to meet Australian needs."

In view of the vital significance of Australia's cotton textile industries both in peace and in war, the question of American supplies must receive the prompt attention of the Commonwealth Government.

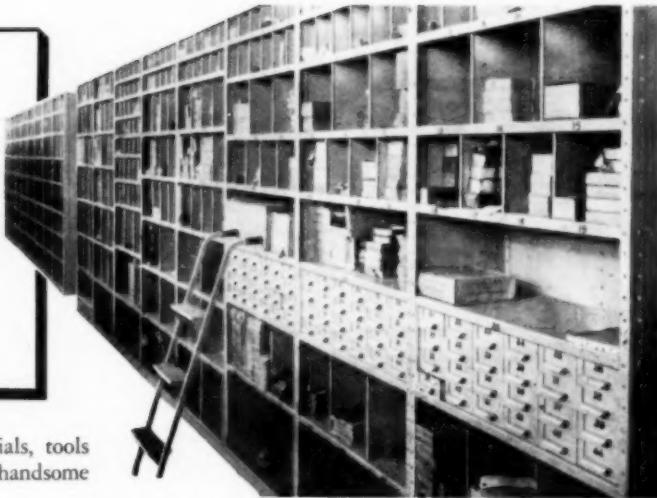
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Kelvinator (Aust.) Ltd., £1,630/
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Hot Cathode Fluorescent Equipment,
Perth G.P.O. British General
Electric Co. Pty. Ltd., £18,876/
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DEPARTMENT OF SUPPLY.

Milling Machine (File No. C.4/
313/363). Cleveland Machinery
Co. Pty. Ltd., £674/16/3; (File No.
C.4/313/395). Demco Machinery
Co. Pty. Ltd., £1,990.

Bicycle Pedals, Steel (File No.
C.4/314/12). Motor Spares Ltd.,
£141/14/5.

Crank Drive and Chain Wheel
Assembly (File No. C.4/314/12).
Basil G. Halsall, £67/4/-.

Front Wheel (File No. C.4/314/
12). Replacement Parts Pty. Ltd.,
£65/8/2.

Cathode Ray Oscillograph (File
No. C.4/316/134). Philips Electrical
Industries of Australia Pty. Ltd.,
£232/10/-.

Switches (File No. C.4/316/166).
Paton Electrical Pty. Ltd.,
£56/3/-.

Bolts and Nuts (File No. C.4/
357/14). Swanston Engineering
Co., £3,857/2/-; Thos. Warburton
Pty. Ltd., £248/19/2; Paul & Gray
Pty. Ltd., £332/3/11.

Nuts (File No. C.4/357/16). Paul
& Gray Pty. Ltd., £1,115/18/2.

Drums (File No. C.4/360/103).
Rheem (Australia) Pty. Ltd.,
£1,016/9/11.

Garbage Cans (File No. C.4/366/
159). S. Hoffnung & Co. Ltd.,
£1,261/8/1.

Towel Rails (File No. C.4/366/
175). Briscoe & Co. Ltd., £185/
8/4.

Lead, Milled Sheet (File No. C.4/
371/350). John McIlwraith Industries
Ltd., £56/1/3.

Cast Iron Castings (File No. C.4/
371/423). David Duncan, £1,179/
13/9.

Gunmetal Casting (File No. C.
4/371/431). W. O. & B. Adams,
£272.

Galvanised Sheets (File No. C.4/
371/459). John Lysaght (Aust.)
Pty. Ltd., £152/19/8.

Lamps, Electric (File No. C.4/
373/110). Condor Lamps (Austria)
Pty. Ltd., £487/10/-; and British
General Electric Co. Pty. Ltd.,
£526/10/-.

Reproduction of 16 M.M. Sound
Prints (File No. C.4/373/111).
Cinecraft Pty. Ltd., £5,986/3/8.

Hook Gauges, for Evaporimeter
(File No. C.4/376/28). Press &
Prisk, £340.

Canned Sliced Beetroot (File No.
C.4/106/378). Raleigh Preserving
Co. Ltd., £897/12/-; and £1,853.

Files, Dovetail, Needle (File No.
C.4/171/20). F. B. Lippman &
Son, £70.

Screwdrivers (File No. C.4/171/
20). McPherson's Ltd., £129/1/6.

Formic Acid (File No. C.4/161/
77). Kreglinger & Fernau (Aust.)
Pty. Ltd., £948.

Resin, Alkyd (File No. C.4/161/
65). Taubmans Ltd., £1,260.

Resin, Alkyd Beckasol (File No.
C.4/161/65). Reichhold Chemicals,
Inc. (Aust.) Pty. Ltd., £5,248/6/5.

Brushes, Scrub, Hand (File No.
C.4/157/62). Federal Broom Co.
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Sweeping Brooms (File No. C.4/
157/62). Thos. Mitchell & Co. Pty.
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171/58). R. J. Harvey, £60.

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C.4/171/59). Gregory Steel Products
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Parallel, Steel (File No. C.4/
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Solution Spray, D.D.T. (File No. C.4/180/87). The Shell Co. of Australia Ltd., £481/5/-.

Ford Ambulance (File No. 51/610). Hastings-Deering Service Ltd., N.S.W., £840.

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Soap (File No. C.4/183/36). Preserverne Pty. Ltd., £153/8/5.

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Shirts, Blue-Grey (File No. C.4/251/120). Leathercrafts (Aust.) Pty. Ltd., £3.916/5/-.

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Frocks, Blue-Grey (File No. C.4/251/124). A. Worth, £3.826/17/6.

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Plain Conduit (File No. C.4/307/360). H. Rowe & Co. Pty. Ltd., £158/6/8.

Irons, Electric (File No. C.4/307/373). British General Electric Co. Pty. Ltd., £187/10/-.

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(Turn to page 74.)

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(Continued from page 72.)
Hannam's Standard Type Vertical, High Pressure Dressing Sterilizers (File No. 50/4524). Hannam's Pty. Ltd., £3,701/8/9.

Sugar (File No. 51/668). The Colonial Sugar Refining Co. Ltd., £1,723/0/11.

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Post Office Scales and Weights (C.6284/15.620). W. & T. Avery Ltd., £3.671/10/- stg.

Motor Trucks and Buses (C.6300/15.663). Fowler Constructions Ltd., £4.985; Trailer Sales and Service Pty. Ltd., £4.859/6/-.

Arm Braces and Combiners (C.6330/15.773). C. J. Greedy and Co., £1.170/2/5.

Loading Colls in Cases (C.6279/15.848-21). Siemens (Aust.) Pty. Ltd., £34.453/6/7; British Automatic Telephone and Electric Pty. Ltd., £55.277/6/2; British General Electric Co. Pty. Ltd., £1.749/18/-.

Galvanized Iron Sheets (C.6383/15.846-7). Associated Industries, £A.20.843/5/-; John Lysaght (Aust.) Pty. Ltd., £332/10/-.

Printed Forms, Statistical Series (C.6477/15.863. C.6477/15.865). Macarthur Press Pty. Ltd., £949/5/8; Andrew Jack, Dyson and Co. Pty. Ltd., £242/3/-.

Underground Cable (C.6226/15.875). Jacoby Mitchell and Co. Pty. Ltd., £21.030/5/-.

Carrier Telegraph Equipment (C.6288/15.885-7). Standard Telephones and Cables Pty. Ltd., £6.871/19/6; British General Electric Co. Pty. Ltd., £90.609/0/3; Telephone Manufacturing Co. (Asia) Pty. Ltd., £18.672.

Coil Winding Wire (S.80/1806/15.892). Gilbert Lodge and Co. Ltd., £623/14/-.

Astronomical Telescopes (S.51/28/15.903). N. H. Seward Pty. Ltd., £297/16/6.

Induction Colls (C.6391/15.903. C.6391/15.905. C.6391/15.906). Siemens (Aust.) Pty. Ltd., £1.189/5/-; Telephone Manufacturing Co. (Asia) Pty. Ltd., £296/13/4; British General Electric Co. Pty. Ltd., £1.056/2/6.

Power Supply, Stabilizing Equipment for Research Laboratories (S.51/121/15.909). Stabilac Pty. Ltd., £402.

Plugs and Sockets (C.6363/15.910-7). Ericsson Telephone Manufacturing Co. £6.002/10/10; A. Bailey and Co., £1.375; Telephone Manufacturing Co., £663/6/5; Transmission Products Pty. Ltd., £10.871/2/11; Standard Telephones and Cables Pty. Ltd., £206/13/4; British Automatic Telephone and Electric Pty. Ltd., £2.440/5/-.

Public Address Amplifiers (C.6317/15.923). Trimax Transformers, £3.672.

Lead, Sheet (C.6445/15.925-33). Thomas Thoms Pty. Ltd., £8.083/6/8; McIlwraith Industries (Sales) Pty. Ltd., £18.594/3/4; John Danks and Son Pty. Ltd., £11.311/13/4; John Danks and Son Pty. Ltd., (Melbourne), £B.225/7/6; John McIlwraith Industries Ltd., £10.434/18/9; Walter Coop Pty. Ltd., £5.655/3/9.

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Laboratory Water Bath
Ellotts and Australian Drug Pty. Ltd., £35/15/-.

Drums, Rheem (Australia) Pty. Ltd., £36/6/8.

Gully Grating and Frames. The Mascot Engineering Coy., £120.

Concrete Mixers. William Simpson & Sons (Asia), £2,246/6/6.

Fire Tiles. Woodall-Duckham (Aust.) Pty. Ltd., £48/15/-.

Conveyor Belting. Goodyear Tyre & Rubber Co. (Aust.) Pty. Ltd. (Part), £67/0/8; Dunlop Rubber (Aust.) Ltd. (Part), £48/11/3.

Butt Joints. Monier Pipe Co. Pty. Ltd., £57/10/-.

Excavators. Norton Toolitt & Co. Pty. Ltd., £15,394.

Protection Angles. Permasteel Pty. Ltd., £232.

Brass Expansoin Plates. Carrington Motor & General Engineering Works, £232.

Lorries. Larke Hoskins Pty. Ltd., £4,100/19/-.

METROPOLITAN WATER, SEWERAGE AND DRAINAGE BOARD

Iron, galv., 60 tons, £113 to £122 per ton. Emm. Yannoulatos (Overseas) Pty. Ltd.

Structural steelwork, 7 tons, £1,124. K. D. Welding Co.

Cranes, two, pneumatic tyred, mobile, £11,851 ea. Hastings Deering Pty. Ltd.

Bits, chisel type, detachable, tungsten carbide, 50, £3/7/- ea., less 10 p.c. G.B.S. Hard Metal Co.; 200, £3/17/- ea., less 15 p.c. Commonwealth Steel Co. Ltd.

SYDNEY COUNTY COUNCIL ELECTRICITY UNDER-TAKING

Turbine blading, £33,154. Australian General Electric Pty. Ltd.

Turbine blading, £18,540. Australian General Electric Pty. Ltd.

Tubes, superheater, solid drawn steel, £2,893. Babcock and Wilcox of Aust. Pty. Ltd.

Meters, current watt-hour, 16,000, £55,800. Electricity Meter Manufacturing Co. Pty. Ltd.; 4,000, £14,700. Warburton Franki Ltd.

Cable and pilot cable, 33,000 V., £142,668. Enfield Cables (Aust) Pty. Ltd.; £142,718. Noyes Bros (Sydney) Ltd.; £146,255. Siemens (Aust.) Pty. Ltd.; £142,804. Standard Telephone and Cables Pty. Ltd.; £144,045. Lawrence and Hannson Electrical Pty. Ltd.; £36,900. Electrical Equipment of Aust. Ltd.

Ltd.; £29,430. A. W. A. Telcon Pty. Ltd.; £29,480. H. Rowe and Co. Pty. Ltd.

PUBLIC WORKS DEPARTMENT

Mobile X-ray unit, Hastings District Hospital, £579. Bell and Kindred.

Dental X-ray unit, United Dental Hospital of Sydney, £135. Bell and Kindred.

Const. Nurses' Quarters, Wollongong District Hospital, £186,985. F. C. W. Powell & Son.

Tractor, FIAT, 50R, £2,785. Tutt-Bryant Ltd.; Ripper, 5 Tyne. Eritstand Distributors Ltd.; Sheepfoot Roller, £398. Construction Equipment Company, for Murrumbidgee Shire Council.

Pumping Plant, Elec. Driven, Guyra Water Supply, £2,927. Mc-Kinlay Fletchers Pty. Ltd.

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home, Muswellbrook, £1,938.
F. H. Compton & Sons.

Air Conditioning Plant, Bega
district hospital, £8,718. Gordon
Bros. Pty. Ltd.

VICTORIA

DEPARTMENT OF PUBLIC WORKS.

Refrigeration Equipment, for
Warrnambool High School. Rickards
Bros. Pty. Ltd., £420.

Fire Escape Stairways, for
Ararat Mental Hospital. J. H.
Brown & Son Pty. Ltd., £297.

Window Fittings, for Collingwood
Technical College. Cyclone Co. of
A. Ltd., £24.

Refrigerator, for Royal Park Re-
ceiving Depot. Rickards Bros.
Pty. Ltd., £99.

Fittings, for Cookery Room at
Mordialloc High School. D. Tinck-
nell, £175.

Electric Clocks, for Camberwell
High School. Ingram Bright Pty.
Ltd., £35.

Passenger Lift, for Dept. of
Agriculture. Johns & Waygood
Ltd., £7,671.

Sound-proof Windows, for Col-
lingwood Technical College. G. H.
Curtis & Sons, £448/8/-.

Fittings, for Kyabram. Reid &
Crabb, £76.

Fittings, for Mental Hospital,
Sunbury. R. L. Phillip, £24/10/-.

Fume Extraction System, for
Collingwood Tech. School. R. C.
Wright & Co. Pty. Ltd., £300/18/9.

Steam Line, for Heatherston
Sanatorium. J. L. Williams Pty.
Ltd., £825.

Generating Set, for Training
Centre at Langi Kal Kal. Mitchell
& Co. Pty. Ltd., £1,232.

Kitchen Equipment, for Grass-
well Sanatorium. C. E. Guy &
Co., £80.

Window Fittings, for Dunstan
Tuberculosis Chalet. Campbell &
Ibbotson, £137/10/-.

Fittings, for Belmont. Wyett
Mfg. Co. Pty. Ltd., £95/7/6.

GOVERNMENT RAILWAYS DEPARTMENT.

Welding Outfit, Engine Driven,
Electric (Ten. T.7783). Lincoln
Electric Co. (A.) Pty. Ltd., £184/
10/- each.

Paper Rolls, for Calculator
(Ten. T.7783). Boxmoor Mfg. Co.
Pty. Ltd., 4/6 per roll.

Mains Connection (Ten. T.7786).
A. H. Gibson (Elect.) Pty. Ltd.
Boxed 2 Point, 6/6 each; Boxes 3
Point, 9/10 each.

Power Rectifier (Tender No. T.
7775). McKenzie & Holland
(Aust.) Pty. Ltd., £76/1/9 ea., less
20%.

Turnbuckles, Galv., Steel (Ten-
der No. T.7740). Herbert Delcot
Pty. Ltd., 20/7 ea.

Extruded Brass Bars (Tender
No. T.7772). Austral Bronze Co.
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CURRENT TENDERS

NEW TENDERS

The following tenders have been called since our last issue. Current tenders which have been published in previous issues follow this section.

COMMONWEALTH

POSTMASTER-GENERAL'S DEPARTMENT.

Loose Leaf Binders and Index Sheets (Sch. C.6546). April 5.

Metal Screenings, Toppings, etc. (Sch. V.466). April 17.

Printed Forms, P.M. (Sch. C. 6544). April 3.

Printed Forms, P.M. (Sch. C. 6545). April 10.

Voice Frequency Repeater Equipment (Sch. C.6543). May 10.

AUSTRALIAN ALUMINIUM PRODUCTION COMMISSION.

Aluminium Conveyor, Kiln Discharge (Spec. M.50). April 30.

Bucket Elevators (Spec. M.49). April 16.

Insulated Cable, approx. 215,000 yds. (Spec. E.38). April 18.

DEPARTMENT OF CIVIL AVIATION.

Engraving Machines and Accessories (Sch. 337). April 17.

DEPARTMENT OF SUPPLY.

Tools. March 27.

GOVERNMENT RAILWAYS DEPARTMENT.

Diesel Engines and Centrifugal Pumps. Extended to April 10.

STORES SUPPLY AND TENDER BOARD.

Brushware (Sch. C.T.B. 964). March 27.

NEW SOUTH WALES

GOVERNMENT RAILWAYS DEPARTMENT.

Circuit Breakers—High-Speed, 1,500-volt., complete with control

equipment, for Western Main Line. Supply of 165 (Spec. 1284). Extended to April 11.

D.C. Electric Welding Sets, Diesel Driven, Portable (CE-10.351). April 10.

Electric Textile Cutting Machine, straight knife type (CE-10.339). April 16.

Four-channel Carrier Telephone System, Complete with Repeaters (Spec. 88). Extended to April 11. Hand Concrete Mixers, 1½ cub. ft. (CE-2736). March 28.

DEPARTMENT OF PUBLIC WORKS.

Concrete Mixers. March 28.

Industrial Work Gloves. April 11.

Inter-Office Telephone System. March 30.

Oil Fired Steam Generating Plant, and Steam and Condensate Systems, for Bathurst Teachers' College. April 9.

Rubber-tyred Rickshaw Type Barrows, 6 cub. ft. cap. March 28.

Suction Ventilators. April 11.

DEPARTMENT OF MAIN ROADS.

Canvas Duck. March 27.

Crawler Tractors. April 3.

Disc and Bobbin Sanding Machine. April 3.

Electric Motors, ½ h.p. and ½ h.p. March 29.

Front-End Loaders. April 3.

Kerosene Refrigerator. March 27.

Motor Vehicle Wheel Alignment Equipment. March 27.

Steel Boiler Tubes. March 29.

DEPARTMENT OF SUPPLY.

A/T Equipment (Wireless Transmitters). April 19.

Hot Water Cans and Lids and Branch Pipes. April 5.

Insulating Bushes. March 30.

METROPOLITAN WATER, SEWERAGE AND DRAINAGE BOARD.

Sickle-Type Mowing Machines (3), 36 in., Petrol-Engine Driven (Quot. 8790). March 28.

Trailers (7, or alternatively 13), 2-tons cap. (P.T. 934). May 8.

STATE CONTRACTS CONTROL BOARD.

Air Compressor. March 29.

(Turn to page 78.)

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NEW TENDERS — Contd.

Calculating Machine, Electrically-operated. March 28.
Deck Chairs. March 27.
Electric Meters, Transformers, Radio Parts, Electric Motors. March 27.
Engineers' Machinery. March 28.
Lawn Mower. March 28.
Safety Pins. March 27.
Sewing Machines, Electric. March 30.
Tools. March 28.
Trichloroethylene Degreasing Plant. March 29.
Wooden Card Cabinets. March 27.
Woodworking Machinery. March 27.

SYDNEY COUNTY COUNCIL

Low Voltage Cables, for Pyrmont "B" Power Station (Spec. 1553). Extended to April 19.

Overhead Transmission Line, 132,000 volt, from Lugarno to Homebush (Spec. 493). Extended to April 12.

♦ ♦ SEE ALSO ♦ ♦
"LATE OPEN TENDERS"

Relays and Associated Equipment, for Eu-bar Protection at Homebush Sub-station (Spec. 1522). Extended to June 7.

MISCELLANEOUS.

Heavy-Duty Motor Truck, Diesel or Petrol, capacity 6-8 tons and 6-8 cub. yds., fitted with Berryman Loader; Road Ripper, Hydraulically Controlled, suitable for use with Vendor Tractor Model DR. 70, for Shire of Nundah. April 11.

VICTORIA

GOVERNMENT RAILWAYS DEPARTMENT.

Heat Treatment Furnace. April 4.

Mobile Bucket Loaders (Contract 58,723). May 2.

MELBOURNE HARBOUR TRUST COMMISSION.

C.S. Connecting Links, for Hopper Doors (24). March 30.

Dump Wagons (2), 1 cub. yd. March 30.

STATE ELECTRICITY COMMISSION.

Fuel Oil for Stationary Diesel Engines (Spec. 50-51/274). Extended to March 28.

Rock Crushing and Screening Plant (Spec. 50-51/243). Extended to April 4.

MISCELLANEOUS.

Utility Trucks (2), for City of Fitzroy. April 9.

(Turn to page 80.)

Lathe Centres — for deeper, faster cuts



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NEW TENDERS - Contd.

QUEENSLAND

STATE ELECTRICITY COMMISSION.

Transformers (Spec. 259). Extended to April 11.

SOUTH AUSTRALIA

SUPPLY AND TENDER BOARD.

Air Conditioning System. April 2.

Axleboxes, C.S. April 2.

Bar Reeling Machine. March 27.

Film Developing Unit. April 2.

Locomotive Valve Boring Machines (2). March 27.

Pump, 8,000 g.p.h., with motor. March 27.

Switchboards, Distribution (10). April 2.

Tyre Boring and Turning Mill. March 27.

WEST AUSTRALIA

GOVERNMENT TENDER BOARD.

Cable and Cable Boxes (Sch. 74A, 1951). April 19.

Condensing Unit (Sch. 104A, 1951). March 29.

Pumping Plant (Sch. 109A, 1951). March 29.

Pumping Machinery, Sewage Pumping (Sch. 113A, 1951). May 3.

Railcars, Diesel (Sch. 76A, 1951). May 17.

Stabilisers (Sch. 103A, 1951). March 29.

Transformers (Sch. 102A, 1951). April 5.

NEW ZEALAND

STATE HYDRO-ELECTRIC DEPARTMENT.

Insulators, Extra High Tension, Suspension Strings (400); Insulators, extra high tension, strain strings (60). May 15.

CURRENT TENDERS

The following tenders have appeared in previous issues and are still current.

COMMONWEALTH

POSTMASTER-GENERAL'S DEPARTMENT.

Cable Drum Trailers (Sch. C. 6524). March 29.

Communication System between Sydney and Melbourne (Spec. C. 6157). Extended to April 17, 1951.

Constant Voltage Transformers (Sch. C. 6536). April 10.

Copper Line Wire (Sch. C. 6538). April 19.

Engine-driven Generators (Sch. C. 6525). May 24.

F.M. Radio Link Equipment, Portable (Sch. C. 6494). Extended to March 27.

M.F. Broadcasting Transmitters and Associated Equipment (Sch. C. 6598). May 3.

Medium Frequency Broadcasting Transmitters and Assorted Equipment (Sch. C. 6498). May 3.

Physical Programme Line Equipment (Sch. C. 6495). April 24.

Pneumatic Tube System (Sch. C. 6516). May 22.

Pneumatic Tube System, for Collecting Trunk Dockets (Sch. C. 6516). May 22.

Relays, 3000 Type (Sch. C. 6499). April 5.

Portable Air Compressors (Sch. C. 6520). March 29.

Radio Transmission Line Switches (Sch. C. 6488). April 19.

Tools, Leadworking and Measuring, etc. (Sch. C. 6512). April 3.

Transmitters and Parts (Sch. C. 6537). May 31.

Underground Cable (Sch. C. 6537). April 5.

Wire, G.L. Steel Stranded (Sch. C. 6519). April 5.

AUSTRALIAN ALUMINIUM PRODUCTION COMMISSION.

Copper Strip, various sizes, approx. 3½ ton (Spec. E.37). April 2.

Electro - Magnetic Vibrating Feeders (5). (Spec. M.48). April 9.

Roll Crusher and Plate Feeder (40 ton per hour), for Coal (Spec. M.46). April 2.

Special Duty Pumps and Priming Injectors (2). 1,500-gallon, for Ash Sluicing (Spec. M.45). April 2.

Telpher and Grab, Supporting Steel Work, and Hopper, for Ash Removal (Spec. M.47). April 9.

DEPARTMENT OF CIVIL AVIATION.

Crawler Type Tractors (Sch. 335). March 27.

Electrical Test Equipment (Sch. 330). April 10.

Insulated Copper Winding, Resistance and Fuse Wires (Sch. 328). April 3.

Semi-Trailer Motor Truck, Diesel Engineed, 10-ton. April 3.

Portable Air Compressors (Sch. C. 6520). March 29.

Radio Transmission Line Switches (Sch. C. 6488). April 19.

Tools, Leadworking and Measuring, etc. (Sch. C. 6512). April 3.

Transmitters and Parts (Sch. C. 6537). May 31.

Underground Cable (Sch. C. 6537). April 5.

Wire, G.L. Steel Stranded (Sch. C. 6519). April 5.

DEPARTMENT OF SUPPLY.

Cylindrical Buoys. March 29.

Physiotherapy Apparatus; Ivory Metal Cabinet, SW.221 Short Wave Generator, for operation on 230/250 V., 50 Cycle, Complete, Purchase of. March 27.

Saddles, Rocket, Aircraft. April 5.

Tumbler Dryers. March 29.

DEPARTMENT OF WORKS AND HOUSING.

Automatic Voltage Regulator, Induction Type, for Gungahlin, A.C.T. April 3.

Boiling Pans, Steam Heated (4).

Economiser, Grit Arrestor, Induced Fan and Associated Flues, Dampers, etc., for Ballarat. March 27.

(Turn to page 81.)



METAL STAMPINGS

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CURRENT TENDERS - contd.

Hot Water Supply Systems (2), for Canberra. May 8.

Hydro Electric Generating Plant, for Port Moresby. June 19.

Kitchen Type Food Mixer and Accessories. March 27.

Metal Turning Lathes, 41 in. (2), for Technical College, Canberra. March 27.

Passenger-Bed Lift, for Canberra Community Hospital. April 10.

Passenger-Bed Lift, Supply and Instal. April 10.

Switchgear—11 K.V. for Power Station, Canberra. Extended to April 11.

GOVERNMENT RAILWAYS DEPARTMENT.

Rail Motor Section Cars. April 24.

Transformers. Extended to April 11.

STORES SUPPLY AND TENDER BOARD.

Envelopes, for Note Printer (Sch. C.T.B. 958). March 29.

Pneumatic Motor Covers and Tubes (Sch. C.T.B. 962). April 5.

Postmen's Whistles (Sch. C.T.B. 955). March 29.

Reporters' Note Books (Sch. C.T.B. 957). March 29.

Rubber Stamps (Sch. C.T.B. 961). April 5.

STATES

NEW SOUTH WALES

GOVERNMENT RAILWAYS DEPARTMENT.

Centre Lathes, Centre Height 8½ in. to 9 in. Sliding, Surfacing and Screw-cutting Type (CE-10139). April 2.

Centrifugal Limit-Load Fan, 20 in. x 20 in.; Viscous Oil Type Air Filters; Universal Type Registers, 24 in. x 8 in. (CE-10,237). March 29.

Conveyor Belting, 36 in. (CE-5301). March 28.

Electric Concrete Mixers, 1 cub. yd. (CE-10138). April 3.

Electric Overhead Travelling Crane, 15-ton, for Clyde Waggon Works, Sydney (Spec. 540). April 4.

Electric Rail Postheater (for Normalising Welded Rail Joints), at Chullora (Spec. 548). May 18.

Electric Overhead Travelling Crane (100-ton), for Main Workshop at Strathfield. Extended to May 2.

Electric Overhead Travelling Crane, 3-ton, at Strathfield (Spec. 546). May 2.

Glass or Perspex Illuminated Signs, complete with Lampholders and Lamps (CE-10,279). March 29.

Switchgear, 11,000-volt. Indoor Metal Enclosed, for Lawson Sub-Station (Spec. 1286). June 6.

Supervisory Control Equipment, for Western Line Electrification (Spec. 1283). April 11.

Switchgear, Compound-filled, 11,000 Volt, for Martin Place Sub-station (Spec. 1285). March 28.

DEPARTMENT OF MAIN ROADS.

Motor Graders. April 3.

DEPARTMENT OF PUBLIC WORKS.

Crawler Track Tractors, 35-45 h.p. (4). April 6.

Electric Switchboards. March 30.

Motorised Metal Sawing Machine. April 6.

Power Hacksaw. March 28.

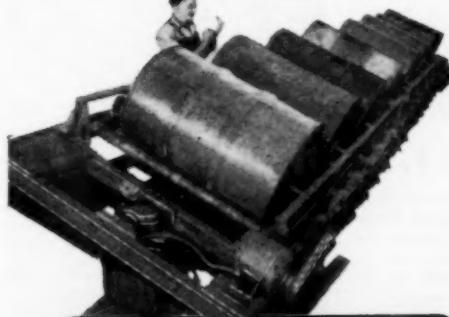
Power Lathe, Drilling Machine. March 28.

(Turn to page 82.)



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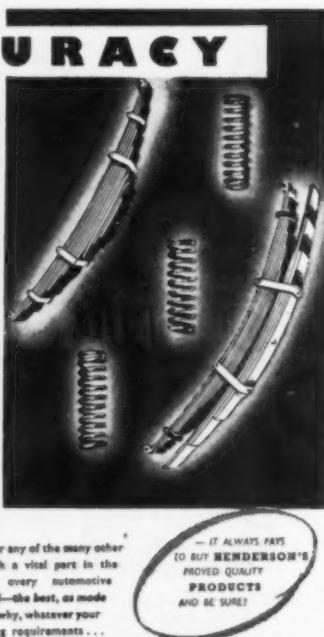
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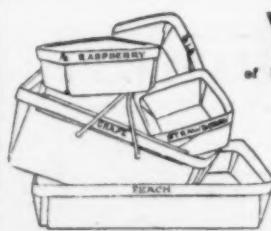
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CURRENT TENDERS — contd.

Tunnel-Type Exhaust Fan, March 30.

Sucker and Blower Unit, March 30.

DEPARTMENT OF SUPPLY.
Chlorosulphonic Acid Drums, March 29.

Components, for 81 lb. Practice Bombs, March 29.

Ternplate Drums (2000), 4-gal. March 29.

METROPOLITAN WATER,
SEWERAGE AND
DRAINAGE BOARD

Concrete Mixers (20), 51 cub. ft. wet cap., pneumatic-tyred, trailer-type, and 3 spare engines (P.T. 393). April 17.

Concrete Mixers (8), 15 cub. ft. wet cap., 5 fitted with Diesel Engines, and 3 with electric motors, and supply of 1 spare electric motor and 1 spare Diesel engine (P.T. 399). April 17.

High Pressure Stop Valves (20 in., 18 in., 15 in., and 12 in.), and High Pressure Reflux Valve (15 in.), (Job 2486). March 27.

Horizontal Spindle Centrifugal Type Sewage Pumping Units, Electrically Driven (2), (Contract 2973). April 10.

Low Pressure Stop Valves (3), 30 in., for Warragamba Pumping Station (Job 2489). April 3.

Pressure Reducing Valves (2), for Southern Towns Trunk Main Amplification (Job 2488). April 3.

STATE CONTRACTS CONTROL BOARD.

Paints, Colours, Varnishes, etc.; Motor Accessories; Mattresses and Pillows; Motor Mowers and Scythes. Annual Supply, from 1st July, 1951, to 30th June, 1952. Closes March 27.

SYDNEY COUNTY COUNCIL.
Boiler Rear Header Girders (2). March 28.

Current Limiting Reactors, for Pyrmont "B" Power Station (Spec. 1541). April 5.

Direct Current Switchgear, for Pyrmont "B" Power Station (Spec. 1534). March 29.

High and Low Voltage Varnished Cambric Insulated Cables (Spec. 1537). April 5.

High Voltage, Paper Insulated Cables (Spec. 1548). April 5.

Industrial Shunting Locomotives, Diesel, Electrical (2), for Pyrmont "B" Power Station (Spec. 1542). April 12.

Low-voltage Cables, for Pyrmont "B" Power Station (Spec. 1533). April 5.

Low Voltage Paper Insulated Cables (Spec. 1549). April 12.

Metal Clad Switchgear (11,000 volt, 250 MVA), for Auburn Substation (Spec. 1544). May 31.

Metalclad Switching Equipment, 5,000 volt, 250 MVA, for Darlinghurst Sub-station (Spec. 1518). April 19.

Miscellaneous Pumping Sets, for Bunnerong "B" Power Station (Spec. 1543). March 29.

Miscellaneous High-pressure Steam and Feed Piping, for Turbo-Alternators, Nos. 29 and 31, for Pyrmont "B" Power Station (Spec. 1552). April 12.

Mobile Testing Equipment, High-voltage (Spec. 1524). April 19.

Motor Covers and Tubes, Annual Supply, from 1st July, 1951, to 30th June, 1952. March 27.

Multicore Control Cable, for Pyrmont "B" Power Station (Spec. 1539). April 5.

Overhead Loader, Motor-driven, Self-propelled, New or Second-hand, for Bunnerong Power Station (Spec. 1535). March 29.

Overhead Ash Handling Cranes, Electrically Operated (2), for Bunnerong "B" Power Station (Spec. 1481). March 29.

Tractor, 4-Wheel, for Marshalling Coal Trains at Pyrmont "B" Power Station (Spec. 1550). April 5.

Transformer Winding Temperature Indicators (Spec. 1519). April 12.

MISCELLANEOUS.

Centrifugal Pumping Plants, Electrically Driven (2), (Contract W-18), for Shire of Shoalhaven. March 26.

Metal-clad Switchgear, High Tension, for Municipality of Manly. April 23.

VICTORIA

GOVERNMENT RAILWAYS
DEPARTMENT.

Automatic Air Compressor; Spray Guns, Twin Head (5). April 18.

(Turn to page 83.)

MACHINING CAPACITY

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CURRENT TENDERS - contd.

Amplifiers and Rail Flaw Detectors. April 11.

Back Stripping Machine. April 11.

Diesel Travelling Cranes, 10-ton (Con. 58,665). Extended to April 11.

Fluorescent Lighting Units. April 4.

Fork Lift Trucks (Contract 58,687). March 28.

Hydraulic Press (100-ton). May 2.

Needle Perforating Machine. April 18.

Pen Ruling Machine. April 18.

Power Proof Press, Hand-fed. April 11.

Sand Papering Machine, Triple Drum. March 28.

Scaffolding Units. March 28.

Transformers, 22,000/2,200 volt. April 4.

Universal Saw Trimmer (Contract 58,704). April 11.

MELBOURNE AND METROPOLITAN BOARD OF WORKS.

Surveying Instruments—Vernier Type Theodolites (3), and Dumpy or Quickset Level. April 10.

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MELBOURNE AND METROPOLITAN TRAMWAYS BOARD.

Two-way Mobile Radio Communication (Tender 1614). May 28.

MELBOURNE HARBOUR TRUST.

Concrete Mixers, 21 cub. ft. (3). March 30.

Portable Air Compressors (2). March 30.

STATE ELECTRICITY COMMISSION.

Belt Conveyors, for Tanjil East Quarry (Spec. 50-51/287). March 28

C.I. Fullway Valves (Spec. 50-51/285). April 4.

Chemical Injection—High Pressure Drain, Blow Down, and Master Pressure Gauge Piping and Accessory Equipment (Spec. 50-51/280). April 4.

Current Limiting Reactors (Spec. 50-51/270). April 15.

Derrick Crane, Electrically Operated, 5-ton (Spec. 50-51/279). March 28.

Electric Discharge Lamps and Accessories (Spec. 50-51/281). April 18.

Electrical Indicating and Recording Instruments, Switchboard-type (Spec. 50-51/260). April 18.

Fuses, Low Voltage (Spec. 50-51/253). Extended to April 18.

H.T. Liquid Filled Spring Release Fuses (Spec. 50-51/283). March 28.

Horizontal Centrifugal Pumps, for Kiewa (Spec. 50-51/264). Extended to April 4.

Instrument Transformers and Spares, 22 K.V. (Spec. 50-51/268). March 28.

Lathe, Double Face Plate, Wheel Turning and Grinding (Spec. 50-51/296). May 2.

Porcelain Disc Insulators, for Transmission Lines (Spec. 50-51/257). April 4.

Side Tipping Trucks (26), 3 cub. yds. (Spec. 50-51/269). April 11.

Static Rectifier Plant, 11,000 volt. (Spec. 50-51/261). May 2.

Street Lighting Lanterns (Spec. 50-51/282). June 27.

Testing Transformers and Spares (700 KV). (Spec. 50-51/283). April 26.

Turbo-Generating Set, Steam, 30,000 K.W. (Spec. 50-51/171). March 28.

V.R.L. T.R.S., Low Voltage Cable (Spec. 50-51/289). May 9.

Valves, for Bled Steam, Feed Pump, Exhaust (Spec. 50-51/276). April 4.

DEPARTMENT OF SUPPLY.
Portable Motor Generators. March 29.

MISCELLANEOUS.
Mechanical Road Sweeper, for City of Fitzroy. April 9.

Quarrying and Crushing Plant, with necessary Auxiliary Equipment, for Shire of Wycheeprof. March 31.

Utility Trucks (2), 12-15 cwt. for City of Preston. April 2.

QUEENSLAND

BRISBANE CITY COUNCIL.

Condenser Tubes (3100), for New Farm Power House. April 6.

Step Down Transformers (6), 1,500 kVA, 33,000 V. to 11,000 V. (Con. E.1/1951). April 20.

Underground Cable, Single Core, 11,000 V., P.J.L.C. (Contract E.2/1951). April 6.

Vertical Spindle, Electricity Driven Sewage Pumps and Motors, with necessary Control Equipment, (Turn to page 85).

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[Page 84, March 24, 1951.]

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CURRENT TENDERS - contd.

for Grovely Pumping Station (Contract W11/1951). March 30.

STATE ELECTRICITY COMMISSION.

Hard Drawn Bare Copper Cable (Spec. 284). April 11.
Outdoor Circuit Breakers, 66 kV. (Spec. 263). June 18.

MISCELLANEOUS.

Steel Pipe Line and Associated Works for Tully Falls' Hydro Electric Scheme. July 22.

Workshops Plant, including Lathe, Welding Plant, Compressor, etc. for Shire of Pioneer. March 30.

SOUTH AUSTRALIA

GOVERNMENT RAILWAYS DEPARTMENT.

Bogie Ore Wagons (10c), 3 ft. 6 in. gauge. April 3.

SUPPLY AND TENDER BOARD.

Conveyor Chains. April 2.
Four Cutter Planing Machine, 9 in. x 3 in. April 2.
Vertical Twin Tandem Band Saw; Horizontal Band Slab, Resaw. April 2.

WEST AUSTRALIA

GOVERNMENT TENDER BOARD.

Bogies, for Railway Wagons. April 5.
Coal Handling Plant, for E. Perth Power House. April 19.
Gas Making and Ancillary Plant (Sch. 23A, 1951). Sept. 27.
Industrial Trucks (Sch. 68A). April 19.

NOISE AND VIBRATION IN INDUSTRY

With sound waves of a frequency up to about 16 cycles per second, the sensation to the ear is of a discontinuous nature with no definite pitch, and while this may constitute a noise, it is of a type rarely met with in industry. From 16 to 16,000 cycles per second, sound takes on a pitch which determines its position in the musical scale. This upper limit varies between individuals, and above the sensation of pitch is lost. All audible sound, including those which are considered to constitute a noise, lie between these limits and may be encountered in industry.

It is, however, very difficult to state what frequency range of noise is of the greatest practical importance to industry. The ear's characteristics are such that it is comparatively insensitive to sounds of low frequency, particularly at low intensities. Even at fairly high levels a sound having a frequency of 30 cycles needs to be reproduced with 10 times the intensity

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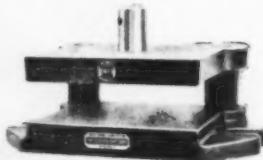
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of a sound at 1,000 cycles for the impression of loudness to be the same. A high-pitched whine of quite small intensity superimposed on lower frequencies can sound very objectionable. Typical speeds of revolution of mechanical equipment may range between 100 and 10,000 r.p.m., corresponding to frequencies of 1.66 and 166 cycles. As the audible range extends down to 16 cycles, it might be expected that until a speed corresponding to this frequency, namely 960 r.p.m., was reached, there would be no audible sound. In practice, however, it is found that all machinery emits sounds differing widely in frequency. This is because other noises are being heard arising from such components as ball bearings and brushes and commutators, from spindle irregularities, or because casings are being forced into vibration at their own resonant frequencies. Thus if a motor rotating at 500 r.p.m. (8.3 cycles) had a ball race incorporating 10 balls, a frequency of 83 cycles might be heard. Experience has shown that the frequency of objectionable noise in industry rarely extends below 30 cycles or above about 7,000 cycles, corresponding approximately to top "A" on the piano.

Noise is normally produced, writes A. E. Gawkell in "Machinery," London, as a result of vibration, but is not necessarily proportional thereto. The area of diaphragm coupled to the source of vibration will determine how effectively the vibration is transmitted to the air and how much noise is

produced. If the diaphragm resonates, more noise will result. In practice, castings, casings, and housings act as diaphragms.

It is found that the error resulting from the assumption that noise is proportional to vibration is small when considering individual roller bearings, ball races, and small motors. At the other extreme it would obviously be very difficult to determine, by vibration measurement, the level of noise from a large appliance with, for example, several motors and a considerable amount of casing, although much information could be obtained by investigating various sections.

For the measurement of noise, an air-pressure operated microphone is required, and for vibration, a vibration pick-up, these instruments converting the variations of air pressure, or the mechanical vibrations, into fluctuating voltages which can readily be measured. A disadvantage when using an air-pressure microphone is that factory noises extraneous to the investigation may be picked up, also noise reflection from walls and ceilings. Also, if the appliance under test is subsequently to be used elsewhere, the noise level as measured by this microphone may not be a true guide to the level at the point of ultimate installation. Some noises, for example, wind noise, cannot be detected by a vibration pick-up, and the air-pressure microphone must be used. Experience has shown, however, that for most purposes the vibration pick-up is preferable and introduces

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APPARATUS FOR NOISE MEASUREMENT

A sound level meter for laboratory use consists basically of an air-pressure operated microphone, amplifier and rectifier, and meter. A sound level corresponding approximately to a 1,000-cycle sound that can just be heard has been standardised, and the meter is calibrated into units indicating sound levels so many times greater than the standard level, the units being decibels. A decibel (db), therefore, is a unit indicating a ratio, or, more correctly, the logarithm of a ratio.

Unfortunately, the impression of loudness conveyed by the ear varies in a somewhat complex manner, depending on the frequency and intensity, and a sound indicated as being, say, 100 times louder than the reference level on the meter would not necessarily be considered to sound 100 times greater to the ear. To take account of the ear's peculiarities, therefore, another unit, designated the "phon," is introduced. This is also based on the standard reference level and is numerically equal to the sound level in decibels at 1,000 cycles. At other frequencies and intensities, however, it differs from the sound level in decibels in a manner corresponding to the ear's impression of loudness. The response of the sound level meter can be arranged to correspond to that of the ear at certain stated intensities, so that

the sound level in phons is indicated on the scale. If, as is preferable for industrial purposes, a vibration pick-up is employed instead of an air-pressure microphone, a comparative reading is obtained. The vibration pick-up actually senses both amplitude and acceleration, and if required the meter can be calibrated in suitable units. Normally, however, a comparative reading is adequate.

Various features can be incorporated in an instrument for measuring sound and vibration which provide for a wide field of application both in the laboratory and the works. By the use of a "high-pass-lowpass" filter frequencies above or below a frequency selected anywhere in the range of the instrument can be passed, and certain types of noise can be shut out when using a vibration pick-up for a noise test. In tests on three motor car axles, for example, approximately equal readings were obtained from all three with the normal amplifier. One axle produced a high "whine," another a low "rasp," while the third had no outstanding note. When the instrument was switched to "high-pass" 2,000 cycles, a very large reading resulted from the whine, while the other two axles produced much smaller readings. When the instrument was switched to "lowpass" 200 cycles, the effect of the low rasp was accentuated and the reading was larger for this axle than for the other two. By moving the pick-up about on the axles the sources of the various

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Noises were readily ascertained. By the incorporation of "bandpass-bandreject" filters, one or more frequencies may be singled out for examination, or a predominating noise frequency may be rejected so that others may be measured. Thus if the meter is observed, while tuning through the range on the "bandpass" position, the maximum scale reading will indicate the frequency of the greatest noise level.

The instrument can also be made to respond to all noise equally, say in the range of 20 to 20,000 cycles, by routing the signal from the microphone or pick-up direct to an amplifier having "flat" characteristics. From the "highpass-lowpass" filter, "bandpass-bandreject" filter, or the flat amplifier, the signal, after suitable amplification with adjustable gain, may be fed to a meter which gives the root mean square value of the voltage, to a thermal meter which gives a heavily damped reading and does not introduce waveform error, or to an expanded scale meter wherein a small increase in voltage gives a deflection of one division at the bottom of the scale while the same voltage increments imparts a deflection 10 or more times as great at the top of the scale. The latter type of meter enables very critical acceptance tests to be carried out, since the readings above a standard level are greatly magnified.

Other equipment may include a loudspeaker amplifier, which permits the type of noise to be readily identified, and noise triggered and overload protection circuits. The latter enable a lamp or buzzer to be switched in at any predetermined noise level, providing a warning when the noise produced by an appliance under test exceeds the acceptable standard. In addition, a cathode ray oscilloscope can be coupled to the instrument for the study of wave forms.

PRODUCTION TESTING

On the other hand, a simplified instrument incorporating only a vibration pick-up, amplifier, and meter can often be usefully employed for production testing. Such an instrument, if calibrated in arbitrary units only, is not subject to errors such as may be introduced when attempting to obtain results in phons, and if care is taken to guard against discrepancies resulting from variations in A.C. main supply, and in amplifier gain, it may be used as an accurate comparator.

For production testing, the vibration pick-up is either held by hand or spring-loaded against an appli-

ance which is known to be generally acceptable as regards noise level. The pick-up is then held in the same position against the other appliances in a batch and the meter will indicate "noise" or "quieter" than standard. The advantage of this test is that it rejects appliances only above a pre-determined noise level. It has been found that the ear cannot always determine what is "noisier," and the reaction of a person to noise depends very much upon the surroundings, state of health, duration of listening, and other factors. Thus the same unit or machine may be rejected on one occasion and accepted on another. This human element is eliminated by using an instrument.

B.A.L.M. GROUP SHOWS FILMS ABOUT PAINTING

Members of the Master Painters and Decorators' Association of S.A. and representatives of firms with industrial spraying plants were the guests of the Australasian United Paint Co. Ltd., at the Shell Theatrette, Adelaide, recently, when two films were shown.

Produced in England by Imperial Chemical Industries and presented in Australia by the B.A.L.M. group, the first film showed in colour the painting of homes, factories and other buildings; while the second film showed the technique of spray painting.

About 110 attended. Mr. Don Elder, secretary of the Master Painters' Association, introduced Mr. W. E. Gill, divisional advertising manager of Australasian United Paint Co. Ltd., Port Adelaide, who spoke on the films, after welcoming those present. Mr. Gill also apologised for the unavoidable absence of Mr. Howard Sweeny, general manager of the A.U.P. Co.

Mr. Cyril Pitcher, president of the Master Painters' Association, moved a vote of thanks to the B.A.L.M. organisation, not forgetting the Shell Co. for its courtesy in having made available its theatrette and operators.

Discussing the films, leading master painters said later that they had been most comprehensive and interesting, showing the different treatments possible and the type of attention given to wood, iron and stone structures. It was generally agreed that the first film in particular should be shown to apprentices, and the move is on foot to arrange such a showing through the apprenticeship trade school. The spray painting film also had valuable lessons to offer regarding such traps for the unwary as supplying too much air and other points dealing with correct application by spray gun.

MOTORIZED TORCH HOLDER

A motorised torch holder for remote control raising and lowering of cutting torches mounted on oxy-acetylene cutting machines has been announced by an overseas firm.

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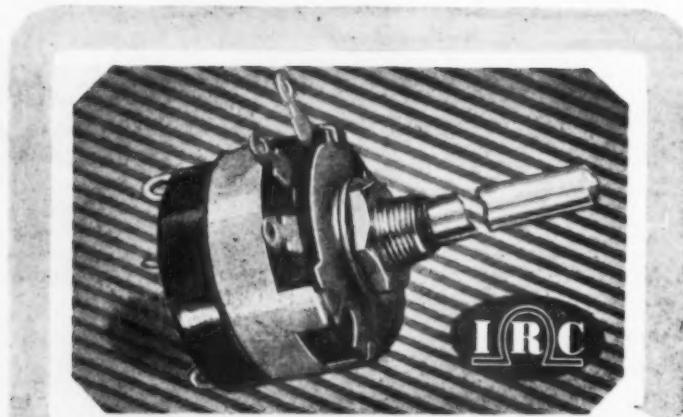
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The device, which is designed for mounting on the 3-inch square torch bar of an oxy-acetylene gas cutting machine, raises or lowers the cutting torch through 5 inches of travel. The remote control switch box mounted on the torch bar at the operator's control station provides a switch to actuate each of four torches individually and a master switch for simultaneous control of all four torches. Another control box is added for each four additional torches employed.

The motorised torch holder can be positioned vertically, 90 deg. left or right, parallel to the longitudinal axis of the torch bar, and with an adaptor can be positioned 90 deg. forward perpendicular to the horizontal axis of the torch bar.

Both motorised torch holder and remote control switch box can be placed at the location most convenient to the operation being performed.

INDUSTRIAL ESSAY COMPETITION.

By way of celebrating the centenary of its operations in Victoria, the Bank of New South Wales is conducting an essay competition for boys and girls up to sixteen years of age. The subject is "Industrial Development in Victoria since 1851." The essay is not to be more than 1,500 words in length and the closing date of the competition is April 16th next. First prize is 10 guineas, with handsome second, third, and consolation prizes.

It is anticipated that the competition will arouse considerable interest in Victoria among teen-

agers who have ample evidence all round them of the growing industrialisation of their State.

MODERN ENGINEERING WAREHOUSE FOR CARLYLE & CO. LTD., PERTH.

Carlyle and Co. Ltd., machinery merchants of Perth and Kalgoorlie, Western Australia, recently acquired an important city site on which it is intended to erect a modern engineering warehouse with a floor space of 100,000 sq. feet, and comprising a basement and four floors. Planned along the most up-to-date lines, the project will make provision for the housing of heavy engineering products, supplies, and parts; bulk storage; general administrative offices; advertising department; air-conditioned theatre; staff cafeteria and lunch rooms; and service departments.

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Window lifters, constant balance, type D3, 300; plated top channels, 500, £1,358. Brown and Dureau Ltd.

F.M. mobile equip., two-way, four, £245 ea. Amalgamated Wireless (Asia) Ltd.

Switchgear, 11 kV, sub-station 52, Sherwood, £2,400. Elder Smith & Co. Ltd.

Cables and joints, 33 kV, £2,455. British General Electric Pty. Ltd.

Trucks, 4½ ton, Ford V8, Thames, with 4 cu. yd. bodies and hydraulic lifts, two, £2,377; with table top bodies, 13 ft. x 7 ft. 6 in., £3,793. Metropolitan Motors Pty. Ltd.

SOUTH AUSTRALIA

GOVERNMENT RAILWAYS DEPARTMENT.

Mobile cranes, pneumatic tyred, 4-ton, three, £5,550. E. B. J. Chaplin & Co. Ltd.; fork lift trucks, 2-ton cap., two, £3,990. Weymouth Motor Co. Ltd.

WEST AUSTRALIA

GOVERNMENT TENDER BOARD.

Drewry diesel mech. shunting locomotives, £10,750. stg. ea. The Diesel Motor Co.

Steam raising plant, £85,178. International Combustion Aust.

Transformer, 1966. George Moss Pty. Ltd.

Suspension and tension sets, 66 kV. T. S. Webster.

Steel sections: Item 1, per length, £7/11/11 stg.; Item 2, per length, £5 7/8 stg.; Item 3, per length, £8/10/9 stg.; Item 6, per length, £13/0/3 stg.; Item 7, per length, £1/1/5 stg.; Item 8, per length, £1 8/2 stg.; Item 9, per length, £18/- stg.; Item 10, per length, £1 0/3 stg.; Item 11, per length, £1 9/3 stg. Elder Smith & Co. Ltd.

Late Open Tenders

COMMONWEALTH

DEPARTMENT OF SUPPLY.

Dust Bins—(250). March 30.

Glassware—Glass Tumblers and Water Jugs. March 30.

Hammock Mattresses—3,000. Ma-
terial Supplied. March 30.

Hand Tools. April 10.

High Tensile Steel Bolts and Nuts—Material Supplied. April 3.

L.R. Rings, for Glass Illumina-
tors. March 30.

P.F.U. Paint. March 30.

Paints. April 3.

Plane Tables, Oil Compasses, etc. April 3.

Red Bunting—750 yds. March 30.

Shades and Fittings. April 5.

Steel Buckets. March 29.

NEW SOUTH WALES

SYDNEY COUNTY COUNCIL.

Metal-clad Switchgear, 11,000 volt., 250 MVA, for Mosman and Crow's Nest Sub-stations (Spec. 1540). June 21.

Petrol-driven Mobile Crane, Fowler Type, New or Second-hand, cap. 5 tons, to be of an Articulated Type mounted on and controlled by Tractor or Truck with Pneumatic Tyres. April 11.

(Turn to page 89.)

LATE OPEN TENDERS—Contd.

DEPARTMENT OF PUBLIC WORKS.

Drafting Machines, etc. April 4.
Pile-driving Plant. Extended to March 30.

Potential Transformers. April 18.

Steel Roller Shutter. April 13.

FORESTRY COMMISSION.

Brake Cylinder Hone Kit. March 27.

Chipping Hoes. March 27.

Horse Collars. March 27.

Hydraulic Jacks, 7 ton. March 27.

Nut Wrench, Pneumatic. March 27.

GOVERNMENT RAILWAYS DEPARTMENT.

Oilskin and Water-proof Clothing, for 12 months ending 31st December, 1952 (Sch. 161). April 11.

DEPARTMENT OF MAIN ROADS.

Conveyor Belts. March 29.

Jackhammer Parts. March 29.

Springs. April 3.

Survey Instruments. March 29.

Wheels. April 3.

QUEENSLAND

STATE ELECTRICITY COMMISSION.

Outdoor Circuit Breakers, 66kV. (Spec. 263). June 13.

MISCELLANEOUS.

Heavy Motor Grader, powered by Diesel Engine over 70 hp, Tandem, or Four-Wheel Drive, and fitted with 12 ft. Blade and Scarifier Attachments, for Bungil Shire Council. April 17.

Two-berth Camping Caravan, suitable for attaching Council Grader, for Eidsvold Shire Council. March 29.

WEST AUSTRALIA

GOVERNMENT TENDER BOARD.

Concrete Lining Steel or Cast Iron Pipe (Sch. 119A). April 5.

Counter Type Refrigerator (Sch. 122A). March 29.

D.C. Arc Welding Plant, 60-375 amp. (Sch. 125A). March 29.

Diesel Railcars, for Railways (Sch. 76A). May 17.

Refrigerant Water Fountains (Sch. 124A). March 29.

Slice Valves, 18 in., 21 in., 24 in. and 30 in. (Sch. 114A). May 5.

Switches and Details, for W.A.G.R. (Sch. 2A). March 29.

Water Motors, for Public Works Dept. (Sch. 71A). March 29.

Wood Turning Lathe (Sch. 121A). March 29.

TASMANIA

HYDRO-ELECTRIC COMMISSION.

Travelling Crane Equipment (C.E. 260). April 25.

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— INDEX OF ADVERTISERS —

Vol. XXXV — No. 1825 . . . MARCH 24, 1951.

Page.	Page.	Page.			
A. & A. Engineering Co.	40	Greatrex, B. V. R., Pty. Ltd.	59	Oakley, J., & Sons Ltd.	11
Acta Ltd.	40	Griffith, Hassel & Griffith	64	Ormsiston Rubber Co. Pty. Ltd.	91
Advans Tyre & Rubber Co. Pty. Ltd	90	Grozier, W. D., & Co.	70	Parbury, Henty & Co. Pty. Ltd.	51
Amory	21	Gutwirth & Sons Pty. Ltd.	38, 61	Parco (A'asia.) Co.	15
Amplion (A'asia.) Pty. Ltd.	81	Halliday, R. H.	78	Perkins (A.) Pty. Ltd.	4
Artay Manufacturing Co.	83	Hanby, J. N.	41	Phillips, Ormonde, Le Plastrier & Kelson	64
Atkins, W., Pty. Ltd.	80	Handford, Chas.	81	Plyfiber Limited	37
Austral Bronze Co. Pty. Ltd.	10	Harris, Hutchinson Pty. Ltd.	38	Pneumatic Tool & Eng. Co. Pty. Ltd.	25
Austral Eng. Supplies Pty. Ltd.	27	Harrison, Ramsay Pty. Ltd.	69	Pop Products Ltd.	3
Australian Berry Baskets Pty. Ltd.	82	Hayman, E.	85	Price, Wm.	82
Australian Forge & Eng. Pty. Ltd	30	Healing, A. G., Ltd.	65	Qantas Empire Airways Ltd.	63
Australian Indicators Ltd.	44	Heine, John, & Son Pty. Ltd.	86	R. V. B. Engineering Products Pty. Ltd.	69
Automatic Heating Appliances Pty. Ltd.	78	Henderson, P. & W., Ltd.	25	Ratz, C. B.	47
B. S. F. Pty. Ltd.	85	Henderson's Federal Spring Works Pty. Ltd.	82	Randie Photo Engraving Co. Pty. Ltd.	77
Baker Eng. Pty. Ltd.	25	Herbert, A. E., Pty. Ltd.	95	Raymond Hydraulic Transmission Co.	74
Ballarat Litho. & Printing Co. Pty. Ltd.	83	Hobson Eng. Co.	69	Raynor, Pty. Ltd.	42
Bambach, A. F., Pty. Ltd.	36	Hodgson's Dye Agencies Pty. Ltd.	95	Renold & Coventry Chain Co. Ltd.	8
Bearing Service Co. of A. Limited	83	Hoelle, J. J., & Co.	76	Rice, F. B.	65
Belloco Pty. Ltd.	73	Hoffmann Mfg. Co. Ltd.	11	Richardson Gear Pty. Ltd.	93
Bishop's Implements Pty. Ltd.	25	Hordern, C. H., & Co.	40	Roberts Eng. Co.	40
Borthwick, T. A., Pty. Ltd.	57	Horton, H. C.	52	Robertson, C. H.	42
Bradshaw Automatics Pty. Ltd.	52	Hughes, R., Pty. Ltd.	72	Rockley Machinery Co.	18
Brenco Pty. Ltd.	94	Imperial Chemical Industries of Aust. & N.Z. Ltd.	47	Rodda, S. N., Pty. Ltd.	75
Brock, J. & F., Bros. Pty. Ltd.	38	Independent Pneumatic Tools, Inc.	17	Semson Spray Equipment Pty. Ltd.	7
Brown & Dureau Ltd.	61	Industrial Plant Installations	98	Sanderson Bros. & Newbold Ltd.	13
Bunge (Australia) Pty. Ltd.	97	International Combustion (A'asia.) Pty. Ltd.	68	Scrutons Pty. Ltd.	92
C. C. Die Castings Ltd.	99	International Radio Co. Pty. Ltd.	64	Silicate & Dolomite Co. of Aust. Pty. Ltd.	35
Carr Fastener Co. of A. Ltd.	41	John, M. B., Ltd.	24	Smith, Copeland & Co. Pty. Ltd.	7
Cartwright, O. F.	64	Jones Bros. Coal Pty. Ltd.	87	Smith, S. & Sons (Aust.) Pty. Ltd.	94
Cave, Arthur S.	65	Jones & Rickards Pty. Ltd.	65	Smith, W. E., Eng. Pty. Ltd.	55
Ceels Pty. Ltd.	84	Kenworth Rubber Limited	14	Southern Cross Porcelain Co. Pty. Ltd.	95
Cheers, A. C.	73	Kirby, J. N., Pty. Ltd.	12	Spruson & Ferguson	69
Churchley, R. B., Pty. Ltd.	42	Kookaburra Products Pty. Ltd.	72	Standard Chemical Co.	68
Claude Neon Ltd.	31	Kueong Trading Co.	39	Star Machinery Pty. Ltd.	59
Colonial Sugar Refining Co. Ltd.	20	Langdon, H. J., & Co. Ltd.	66	Steelbilt Limited	71
Conaghan, Robert A., & Company	54	Lewis & Tyler, Ltd.	32	Steen, W. B., Pty. Ltd.	77
Connolly, J. Ltd.	54	Liberty Motors (Aust.) Pty. Ltd.	41	Stott & Underwood Pty. Ltd.	89
Cooper Bearings	54	Lincoln Electric Co. (A.) Pty. Ltd.	45	Swift & Co. Limited	28
Coventry Climax Engines Ltd.	16	Lock Tool Co. (Aust.) Pty. Ltd.	97	Synchrotac Instrument Co. Pty. Ltd.	78
Cox & Bates	83	Ludowici, J. C., & Son Ltd.	6	Taubmans Limited	59
Crane, G. E., & Sons Ltd.	54	Mack, M. E., & Co. Pty. Ltd.	54	Taylor & Wearing	85
Cumming, J., & Sons	76	Mackie, A. H.	69	Thomas Optical & Scientific Co. Pty. Ltd.	74
Curlewis, C. P., & Co. Ltd.	70	Mangrove Belting Ltd.	91	Thomas, R. L., Pty. Ltd.	81
Demco Machinery Co. Pty. Ltd.	42	Manufacturers Equipment Co.	13	Thompson & Williams	83
Diamond & Board Products (Australia) Pty. Ltd.	23	Marino Products Pty. Ltd.	70	Thompsons (Castlemaine) Ltd.	57
Dimet Pty. Ltd.	82	Marner, G. W., Pty. Ltd.	77	Thornthwaite & Co.	64
Dobbie Bros. Thermometers Pty. Ltd.	63	McAuley Bros. Pty. Ltd.	29	Tomlinson Steel Pty. Ltd.	20
Don Donald & Sons Pty. Ltd.	92	McKay, H. V., Massey Harris Pty. Ltd.	66	Tool Equipment Co. Pty. Ltd.	79
Don Electrical Co. Pty. Ltd.	75	McLellan, W. J., & Co. Pty. Ltd.	88	Triefus Pty. Ltd.	50
Donald Eng. Co.	77	McLeod, Bolton & Co. Pty. Ltd.	51	Van Gelder, J. P., & Co. Pty. Ltd.	72
E. W. Fittings Ltd.	87	McOnid, G. T., & Co.	38	Warburton, Frankl Ltd.	53
Electronic Industries Imports Pty. Ltd.	38	Meehanite Research Institute of Aust	9	Warburton, Frankl (Melb.) Ltd.	77
Electricity Dept., Sydney County Council	93	Melbourne Wire Works	66	Warman & Douglas	78
Exide Batteries of Aust. Pty. Ltd.	85	Merlin Industrial Electroplaters	70	Waterproofing Concrete Products Ltd.	86
F.R.S. Ideal Spring Co. Ltd.	44	Metalex Pty. Ltd.	56	Watt, A. V., & Sons	41
Fabricated Products Pty. Ltd.	96	Miller & Co.	40	Welded Products Ltd.	34
Ferrier, E. S., & F.	43	Minerals Pty. Ltd.	74	Wells, W. H., Pty. Ltd.	62
Ferro Enamels (A.) Pty. Ltd.	44	Modern Tools Pty. Ltd.	96	Western Barbed Wire & Nail Pty. Ltd.	87
G. M. F. Electric Motors Pty. Ltd.	46	Morris, G. McMahon & Co.	85	While, J., & Sons Pty. Ltd.	92
Gadsden, J., Pty. Ltd.	54	Munro, A. J., Pty. Ltd.	76	White, K. C.	41
Galsan Products	41	Newbold General Refractories Ltd.	58	Wilbro Hardware Co.	50
Gardner, Waern & Co. Pty. Ltd. (Front Cover)	23	Nilsen Industrial Group	62	Wilcolated (Aust.) Ltd.	43
Garrett, Davidson & Matthey Pty. Ltd.	2	Noles Engineering Co. Ltd.	42	Wilson & Gilkes	40
Gibert Lodge & Co. Ltd.	23	Norris, J., & Co.	40	Wilson Waratah Metal Co. Ltd.	41
Goddard, H. G., Pty. Ltd.	50	Norton Mfg. Co. Pty. Ltd.	68	Witzig, F., Co. Pty. Ltd.	5, 69
Goninan, A., & Co. Ltd.	67	Norton, Tootill & Co. Pty. Ltd.	100	Woodward & Thurston	38
Gondall & Co. Pty. Ltd.	60			York Air Conditioning & Refrigeration (A'asia.) Pty. Ltd	95
Granowski, G. A.	92				

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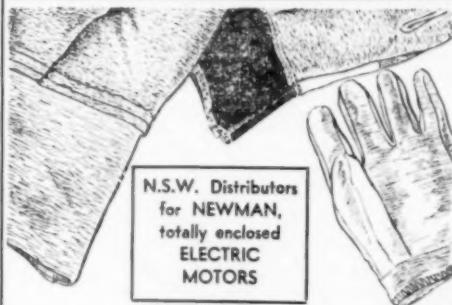
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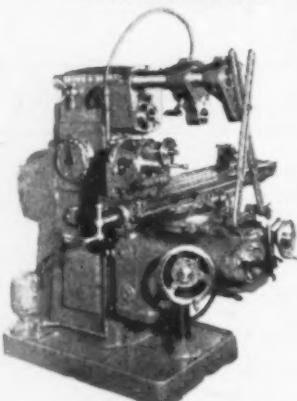
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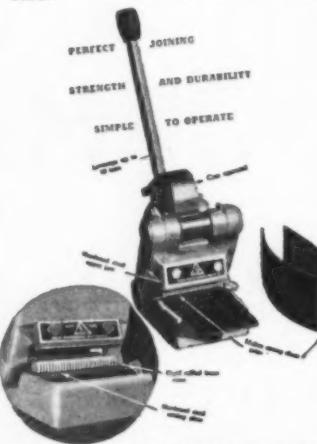
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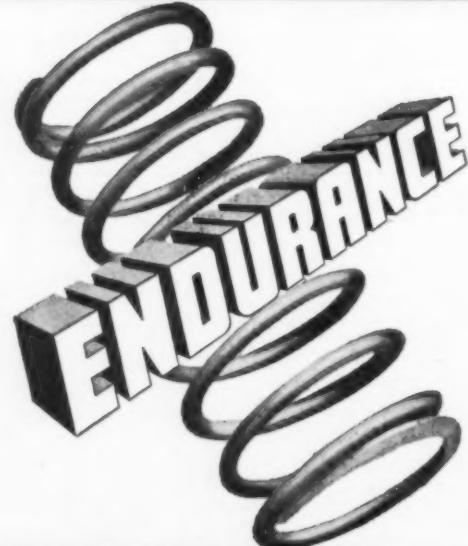
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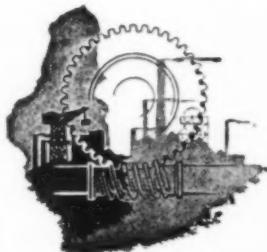
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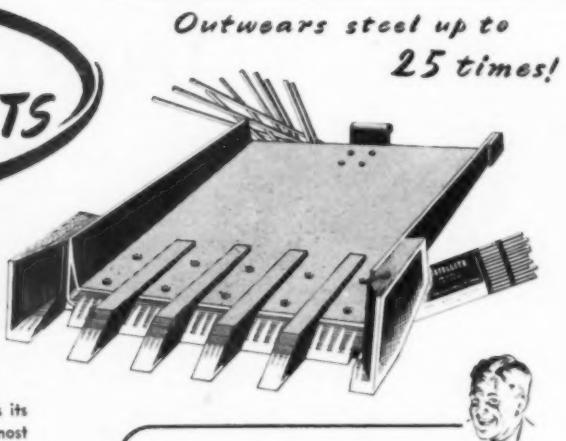
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The required range is engaged by turning the knurled knob to the point clearly marked thereon. A push button, conveniently placed, enables the operator to obtain readings on the machine-set indicating needle, and examine the instrument, if required, remote therefrom. By pressing button on opposite side of instrument, needle returns to zero.

Set comprises:

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2. Male Rubber Centre.
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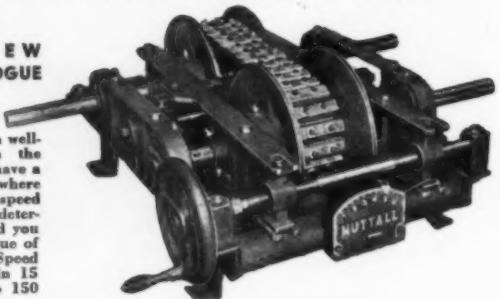
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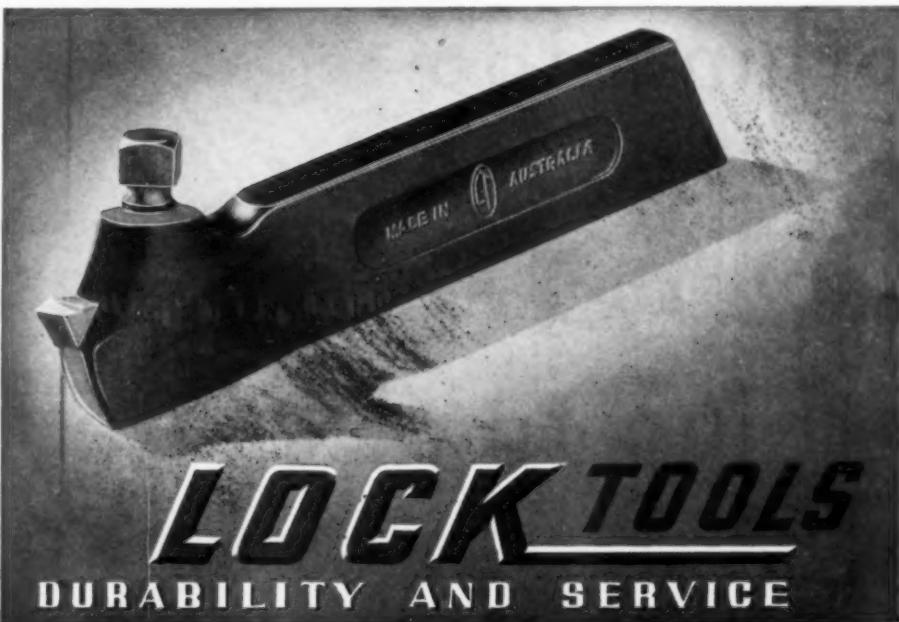
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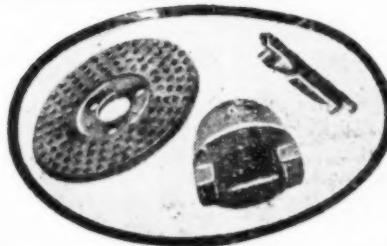
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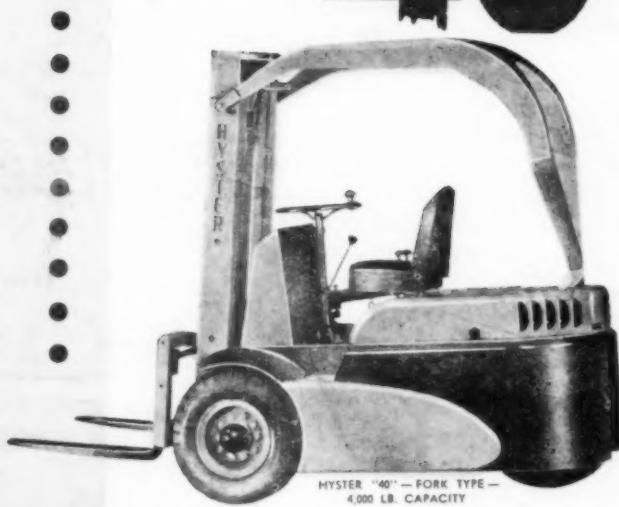


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